CLASSIFICATION: UNCLASSIFIED

CENWK STAFF SUMMARY SHEET

ACTION:	____ FOR INFORMATION	____ FOR GUIDANCE	CONTROL NUM:		
	____ FOR APPROVAL	____ OTHER	SUSPENSE DATE		
	X FOR SIGNATURE				

OFFICE SYMBOL: CENWK-PM-PR DATE: 15 November 2006

SUBJECT: Missouri River Fish and Wildlife Mitigation Program – Baltimore Bottom

PURPOSE: Missouri River Fish and Wildlife Mitigation Program – Baltimore Bottom under WRDA 86 and 99.

BACKGROUND/DISCUSSION:

a. Project Implementation Report – Includes NEPA Review/Environmental Assessment, Agency Coordination, Cultural Resources Coordination, Environmental Permits and Clearances, and Technical Documents.

b. Finding of No Significant Impact: Request **SIGNATURE** of DE at red tab.

RECOMMENDATION:
Recommend that the DE sign the FONSI (at red tab) and return package to PM-PR.

COORDINATION

OFC SYMBOL	ACTION	CONCUR	NONCONCUR	SIGNATURE	DATE	PHONE
3 EC-HH Bitner	Coordination	✓		Thomas Bitner	16 Nov 2006	816-389-3482
4 OD-R	Coordination	✓		Joseph S. Hughes	11/21/06	x 3670
5 OC	Coordination	✓		[illegible]	11/29/06	

INITIALS/DATE			INITIALS/DATE	
1	SECTION CHIEF White	11/16/06		EXECUTIVE ASSISTANT
2	BRANCH CHIEF Combs	11/16/06	6	DEPUTY FOR PM GL 11/30/06
			7	DEPUTY COMMANDER MEL 11/30/06
			8	COMMANDER

ACTION OFFICER (Name, Grade, Phone, Signature)

Matthew D. Vandenberg, GS12, X 3146

NWK Form 1530 (Nov 03) PREVIOUS EDITION OBSOLETE

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
700 FEDERAL BUILDING
KANSAS CITY, MISSOURI 64106-2896

Finding of No Significant Impact

Baltimore Bottom
Chute Construction Project
Lafayette County, Missouri

Project Summary

The U.S. Army Corps of Engineers, Kansas City District (CENWK), in cooperation with the U.S. Fish and Wildlife Service, proposes to construct the Baltimore Bottom Construction Project, under the authority of the Water Resources Development Acts of 1986 and 1999 (WRDA 86 and 99). The proposed project involves the construction of three chutes, and the creation and enhancement of approximately 1060 acres of emergent wetland habitat. The project purpose is to create shallow water chute habitat for the benefit of large river fish, including the pallid sturgeon, create wetland habitat for the benefit of resident and migratory fish and wildlife, and expand shallow water habitat to provide additional connectivity with the Missouri River and its floodplain. This project is also designed to help mitigate for the loss of habitat that resulted from the construction, operation, and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP). The project is located approximately two miles west of Waverly, Missouri, just off Country Road 227 (Baltimore Bend Road) through the Missouri Department of Conservation Baltimore Bend Conservation area. The area is located within Lafayette County, Missouri and is adjacent to the right descending bank of the Missouri River between river miles 297 to 300.1. The area lies in portions of Sections 15, 16, and 17, Township 51 North, Range 24 and 25 West.

Alternatives

Four alternatives were considered; three build alternatives and the "No Action" alternative. Alternative 1 involves the construction of four chutes of varying lengths, to be built in three phases. Alternative 2 involves the breeching of a non-Federal levee in order to create and enhance approximately 1060 acres of wetland habitat. Alternative 3 is a combination of both alternatives 1 and 2. The proposed alternative will connect the Missouri River to its floodplain, create and enhance shallow water habitat, create and enhance wetland habitat, reconnect the Missouri River to its floodplain, and improve aquatic and terrestrial habitat for the benefit of a variety of migratory and resident species.

1) Chute Alternative. Alternative 1 consists of the construction of four chutes: Chute A at 12,665 feet; Chute B at 4,190 feet; Chute C at 4,850 feet, and a revetment chute and bank notch at 1,720 feet in order to create shallow water habitat and provide additional connectivity with the Missouri River.

2) Wetland Alternative. Alternative 2 consists of the breeching of Hodge levee to create and enhance approximately 1060 acres of emergent wetland habitat in order to benefit resident and migratory fish and wildlife species, and provide additional connectivity with the Missouri River. This alternative would also convert approximately 207 acres of agricultural land to bottomland hardwood trees.

3) Combined Alternative (PREFERRED). Alternative 3 consists of a combination of both alternatives 1 and 2.

4) No Action Development. The No Development Alternative represents the alternative of no action by the Federal government. No activities to develop fish and wildlife habitat would be undertaken as part of the No Development alternative. The USFWS currently holds fee title to the Baltimore Bottom Chute Construction Site and is currently managing the land. Without future development activities, no additional floodplain reconnection would be established to the area and terrestrial habitats would recolonize naturally over many years. This alternative could also be considered the natural succession alternative because the habitat that would develop at the site over the long-term would be solely dependent on the processes of natural succession acting on the area. There would be no increase in shallow water habitat with this alternative because no modifications to river structures would occur to allow erosion of the riverbank. This alternative would not reconnect the river to the floodplain except under conditions where river structures or levees are degraded and breached by natural river erosion and scour processes. This alternative would not increase wetland habitat. No additional recreational features would be constructed, but the site would contain public recreational uses such as fishing, bird watching, photography, hunting, and hiking.

Recommended Plan

The recommended plan is Alternative 3 and is described in detail in the Environmental Assessment. Of the four (4) alternatives considered, this plan is recommended because it fulfills all of the program and site-specific goals for the Baltimore Bottom Chute Construction Site, maximizes environmental benefits, avoids impacts to adjacent landowners, and results in no significant adverse impacts to the environment.

Summary of Environmental Impacts

For the construction of the chutes, the creation and enhancement of the wetlands, and creation of shallow water areas, approximately 12.2 acres of cottonwood, silver maple, sycamore, box elder, and willow trees, approximately 48.4 acres of grasslands,

and approximately 30.1 acres of agricultural lands would be impacted. The project would convert approximately 207 acres of agricultural land to bottomland hardwood trees. The completed project will create aquatic riverine habitat which was lost during construction of the BSNP, and provide varied habitat conditions to assist species of concern with feeding, breeding, and sheltering.

Other environmental impacts include noise and disturbance from construction equipment and construction workers during the construction phase of the project. However, the impacts associated with the construction of the project are short term/minor impacts, and considered insignificant.

Mitigation Measures

The proposed project will more than off set the impacts from construction related activities as well as to the 12.2 acres of cottonwood, silver maple, sycamore, box elder, and willow trees through the planting of 207 acres of bottomland hardwood trees. The impacts to the 48.4 acres of grassland will be offset by the USFWS through the planting of approximately 300 acres of native grassland following project completion. The proposed project will also provide up to 128 acres of shallow water chute habitat to the benefit of resident and migratory fish and wildlife species.

Public Availability

The proposed project was circulated to the public and resource agencies through a Public Notice, Number 200602731, dated October 10, 2006, with a thirty-day comment period ending on November 10, 2006. An additional chute feature was added to the proposed plan during the initial public comment period so a supplemental Public Notice, Number 200602731, dated October 26, 2006, with a fifteen-day comment period ending on November 10, 2006 was circulated to the public to inform them of the additional feature. The notices were mailed to adjacent landowners, state and federal resources agencies and other interested parties. In addition, the Public Notices were available for public/agency review and comment on the CENWK-Regulatory Branch's webpage, at http://www.nwk.usace.army.mil/regulatory/public_notices.htm.

Conclusion

Fish and Wildlife Mitigation Projects completed by the Corps of Engineers under the WRDA 86 and 99, generally do not require the preparation of an Environmental Impact Statement. These projects are designed to result in a positive biological output and, therefore, also typically have a beneficial social impact for the local economy. Additionally, the adverse impacts are typically minor/short-term and construction related.

After evaluating the anticipated environmental, economic, and social effects of the proposed activity, it is my determination that construction of the proposed Baltimore Bottom Chute Construction Project does not constitute a major Federal action that would

significantly affect the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date: 30 Nov 06

Michael A. Rossi
Colonel, Corps of Engineers
District Engineer

Missouri River Bank Stabilization and Navigation

Fish and Wildlife Mitigation Program

Baltimore Bottom

USFWS Big Muddy Fish and Wildlife Refuge

Chute Construction Project

Project Implementation Report

November 2006

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Acronyms and Abbreviations

ACT Agency Coordination Team
AMSL Above Mean Sea Level
APE Area of Potential Effect
BEA Bureau of Economic Analysis
BSNP Bank Stabilization and Navigation Project
C Celsius
CRP Construction Reference Plane
CWA Clean Water Act
dbh Diameter at breast height
DPR Definite Project Report (replaced by Project Implementation Report, PIR)
EPA Environmental Protection Agency
ESA Endangered Species Act
HSI Habitat Suitability Index
IDNR Iowa Department of Natural Resources
KDWP Kansas Department of Wildlife and Parks
MDC Missouri Department of Conservation
MDNR Missouri Department of Natural Resources
mg/l Milligrams per liter
NAAQS National Ambient Air Quality Standards
NEPA National Environmental Policy Act
NGPC Nebraska Game and Parks Commission
NHPA National Historic Preservation Act
NLCD National Land Cover Data Set
NPDES National Pollutant Discharge Elimination System
NRCS Natural Resources Conservation Service
NWI National Wetland Inventory
NWP Nationwide Permit
O&M Operation & Maintenance
PgMP Program Management Plan
pH Potential of Hydrogen
PIR Project Implementation Report
PMP Project Management Plan
RM River Mile
RPM Root Pruning Method
SEIS Supplemental Environmental Impact Statement
USDA United States Department of Agriculture
USFWS United States Fish and Wildlife Service
USGS United States Geological Survey
WHAG Wildlife Habitat Appraisal Guide
WRDA86 Water Resources Development Act of 1986
WRDA99 Water Resources Development Act of 1999
WRP Wetlands Reserve Program

Chapter 1
Introduction

1.1 INTRODUCTION

The Missouri River Fish and Wildlife Mitigation Program (Mitigation Program) was authorized by the Water Resources Development Acts of 1986 and 1999 (WRDA86 and WRDA99) to develop fish and wildlife habitat along the lower Missouri River from Sioux City, Iowa, to the mouth near St. Louis, Missouri, to mitigate for the loss of habitat that resulted from construction, operation, and maintenance of the Missouri River Bank Stabilization and Navigation Project (BSNP). The Baltimore Bottom Unit of the Big Muddy National Fish and Wildlife Refuge was purchased by the U.S. Fish and Wildlife Service in fee title from willing sellers on October 8, 2002, for the purpose of preserving and restoring potions of the Missouri River floodplain and its fish and wildlife habitat. This Project Implementation Report (PIR) includes an Environmental Assessment consistent with the National Environmental Policy Act (NEPA). It provides an analysis of alternatives and a detailed description of the recommended plan for habitat and chute development at the Baltimore Bottom Chute Construction Site. This PIR also contains an evaluation of environmental impacts related to the development of aquatic and terrestrial habitat consistent with the requirements of pertinent Federal regulations including NEPA, the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and Section 404 of the Clean Water Act (CWA).

1.1.1 PROJECT AUTHORITY

The Baltimore Bottom Unit was acquired by the US Fish and Wildlife Service as part of the Big Muddy National Fish and Wildlife Refuge. A portion of the site will be developed with chutes, wetlands, and shallow water habitats as part of the US Corps of Engineer's Mitigation Program. The Mitigation Program was initially authorized in Section 601(a) of

WRDA86 (Public Law 99-662). The authorization included the acquisition and development of 29,900 acres of land, and habitat development on an additional 18,200 acres of existing public land in the states of Iowa, Kansas, Missouri, and Nebraska. The total amount of land authorized for mitigation by WRDA86 was 48,100 acres.

Section 334(a) of WRDA99 (Public Law 106-3) modified the Mitigation Program by increasing the amount of acreage to be acquired and/or mitigated by 118,650 acres. Therefore, the total amount of land authorized for mitigation is currently 166,750 acres.

The Corps prepared a *Feasibility Report and Environmental Impact Statement* in 1981 on the original Mitigation Program of 48,100 acres. After Congress modified the Mitigation Program by WRDA99, the Corps initiated a *Supplemental Environmental Impact Statement* (SEIS) in September 2001 for the additional 118,650 acres. The SEIS was completed in early 2003 and the *Record of Decision* (ROD) was signed in June 2003.

1.1.2 Project Description and Location

The proposed project would develop fish and wildlife habitat at the Baltimore Bottom Unit. Habitat development activities would include creating and enhancing wetland areas and constructing four chutes for a variety of wildlife species and big river fish including the endangered pallid sturgeon. The proposed project is described in more detail in Chapter 2 of this report.

The Baltimore Bottom Unit is an approximately 1,626-acre rural area located just northwest of Waverly, Missouri. The area is located within Lafayette County, Missouri and is adjacent to the right descending bank of the Missouri River at river miles 296.0 to 300. The area is easily accessible from Waverly by taking Highway 24 west approximately two miles to County Road 227 (Baltimore Bend Road), turning right and proceeding through the Missouri Department of Conservation Baltimore Bend State Conservation Area to the parking lot at the bottom of the hill. The area lies in portions of Sections 15, 16, and 17, Township 51 North, Ranges 24 and 25 West (Figure 1-1).

Development of the Baltimore Bottom Chute Construction Site is the responsibility of the Corps. The Reaffirmation Report (Corps 1990) established that for the Mitigation Program, the Kansas City District would have responsibility for projects in Missouri and

US Army Corps of Engineers
Kansas City District

Scale: (Miles)
0 0.25

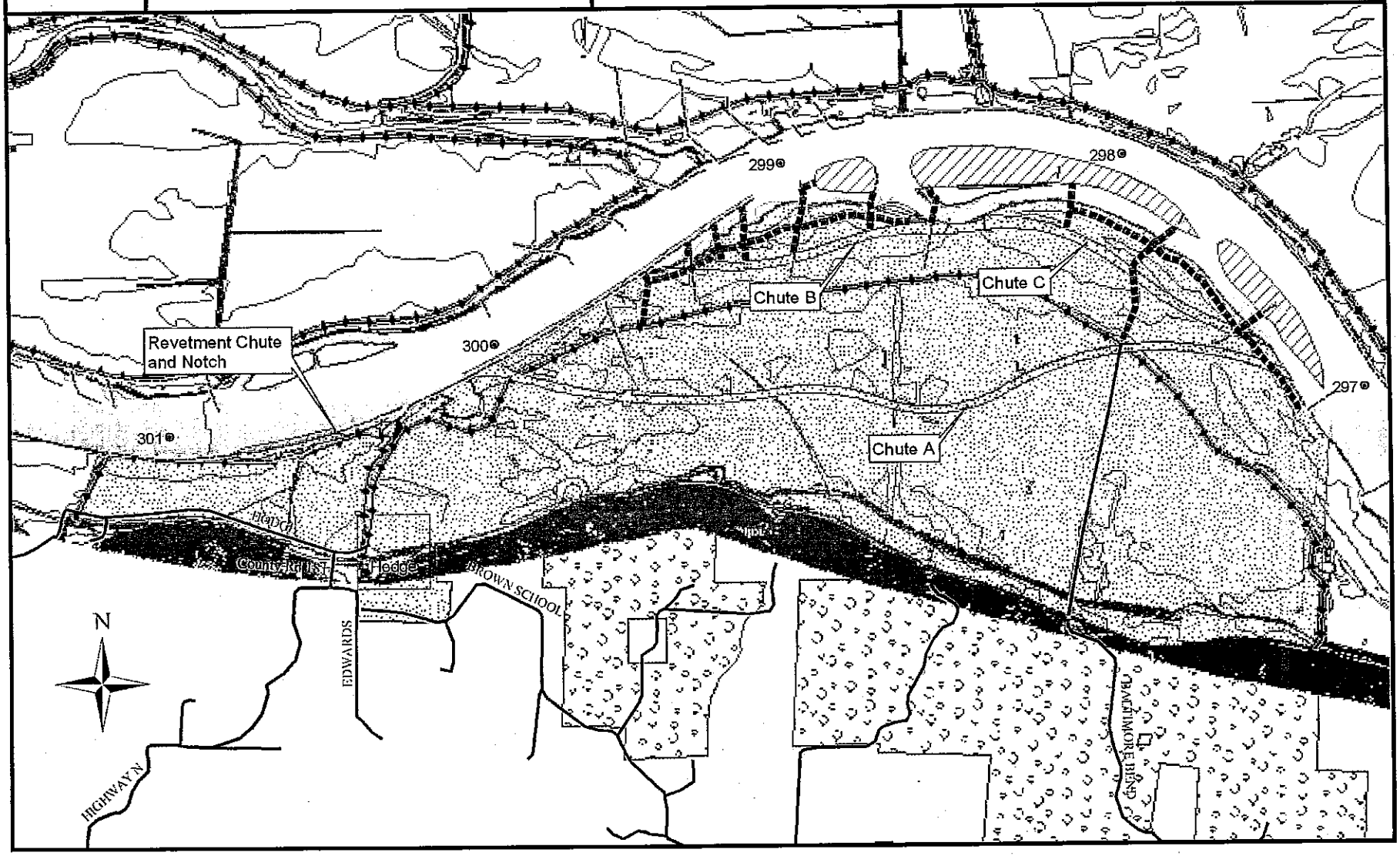
Baltimore Bottom
Shallow Water Habitat Development

November 2006

Big Muddy National Fish and Wildlife Refuge
Baltimore Bottom Unit
Lafayette County, Missouri

Legend

- Excavation
- Spoil
- Haul Route
- Road
- Highway
- City Boundary
- FWS Property
- MDC Property
- Missouri River
- Dike / Revetment
- River Mile
- Levee



Kansas and the Omaha District would have responsibility for projects in Iowa and Nebraska. On October 8, 2002, the Baltimore Bottom Unit was purchased by the USFWS to manage as part of the Big Muddy National Fish and Wildlife Refuge. The USFWS has implemented agricultural leases and low maintenance operation plans to allow the land to recover to natural conditions.

1.1.3 Previous Related Reports

The following previous reports are related to this PIR:

- U.S. Fish and Wildlife Service, 1980. *Missouri River Stabilization and Navigation Project, Sioux City, Iowa to Mouth Detailed Fish and Wildlife Coordination Act Report.*
- U.S. Army Corps of Engineers, Missouri River Division, 1981. *Missouri River Fish and Wildlife Mitigation Iowa, Nebraska, Kansas, and Missouri Final Feasibility Report and Final Environmental Impact Statement.*
- U.S. Army Corps of Engineers, Kansas City District, 1990. *Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project, Reaffirmation Report.*
- U.S. Army Corps of Engineers, Missouri River Division, 1990. *Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project, Real Estate Design Memorandum #1.*
- U.S. Fish and Wildlife Service, 1994. *The Big Muddy National Fish and Wildlife Refuge Final Environmental Impact Statement.*
- U.S. Army Corps of Engineers, Kansas City and Omaha Districts, 2003. *Missouri River Fish and Wildlife Mitigation Project, Final Supplemental Environmental Impact Statement and Record of Decision.*
- U.S. Army Corps of Engineers, Missouri River Division, 2004. *Missouri River Fish and Wildlife Mitigation Program, Program Management Plan.*

1.1.4 Project Goals and Objectives

The overall goal for the Baltimore Bottom Unit, as a component of the Mitigation Program, is to develop fish and wildlife habitat. Beginning shortly after authorization by WRDA86, the Agency Coordination Team (ACT, discussed in more detail in Section 1.4) has been involved in Mitigation Program guidance and has helped establish overall objectives to:

- Maximize aquatic and terrestrial habitat and species diversity;
- Reconnect the river to the floodplain, and;
- Develop each site to optimize habitat conditions for that individual site.

The specific goals for the Baltimore Bottom Chute Construction Site were developed to contribute to meeting the overall Mitigation Program authorization and to maximize habitat potential for the site. The Corps and the U.S. Fish and Wildlife Service (USFWS) identified these site-specific goals and objectives during project formulation, discussions between the two agencies, and in field observations of site conditions. The site-specific goals identified include:

1) Create a more diverse riverine habitat by eroding the existing bank of the Missouri River to create shallow water habitat,
2) Create and enhance area wetlands, and
3) Establish and maintain four chutes and backwater areas to reconnect the river to the floodplain.

Table 1-1 summarizes the acres of habitat types that currently exist at the Baltimore Bottom Unit, the desired future acres of habitat that would result from implementation of the goals for the site, and project outputs (i.e., net habitat changes).

1.1.5 Scope of Study

The scope of this study is confined to the project area shown on Figure 1-1. Alternatives considered in this study were limited to those techniques that would restore or preserve terrestrial and/or aquatic habitat on the acres currently owned at the project site. A

supplement to this PIR would be needed if additional acres were acquired. All permanent project features would be constructed on government-owned land.

Table 1-1. Site Habitat Goals

General Habitat Type	Existing Acres	Future Acres	Output
Side Channels and Chutes	0	128.7	128.7
Lakes, Ponds, and Scour Holes	5.53	5.53	0
Developed	21.67	21.67	0
Barren	2.82	2.82	0
Woodland	178.78	373.58	194.8
Scrub	9.28	9.28	0
Grassland	474.79	426.39	-48.4
Cultivated	911.02	673.92	-237.1
Forested Wetlands	6.37	6.37	0
Emergent Wetlands	15.4	1,060*	1044.6*
Shrub Scrub Wetlands	12.69	12.69	0

*Maximum amount. Emergent wetland output will vary year-to-year depending upon how the USFWS regulates water via the stop-log structure.

1.2 PURPOSE OF AND NEED FOR ACTION

The purpose of the Mitigation Program, and the site-specific project, is to mitigate the loss of fish and wildlife habitat due to the Bank Stabilization and Navigation Project (BSNP) for the Missouri River. The Rivers and Harbors Act of 1912, 1925, 1927, and 1945 authorized the BSNP. The existing BSNP extends 735 miles from Sioux City, Iowa to the mouth near St. Louis, Missouri and maintains a nine-foot deep by 300-foot wide channel. The BSNP consists mainly of revetments along the outsides of bends and transverse dikes along the insides of bends to force the river into a single active channel that is self-maintaining.

The need for the Mitigation Program, and the site-specific project, rests in the loss of a unique floodplain ecosystem that included diverse fish and wildlife habitat and species, and the changing public values that have placed significant importance on reestablishing these important fish and wildlife species and ecological resources. The historic variety and quality of aquatic habitats have been eliminated or altered by construction of the navigation channel. Dikes and revetments have greatly reduced the meandering of the river, and flooding of the river has resulted in accretion of lands that have allowed for expansion of agricultural practices into the historic floodplain. The Corps estimated that by 2003, approximately 522,000 acres of fish and wildlife habitat in the natural channel and meander belt of the Missouri River was lost as a result of the construction, operation, and maintenance of the BSNP.

Habitat loss and resultant adverse impacts to fish and wildlife resources need to be mitigated as authorized by Congress through WRDA86 and WRDA99. Acquisition and development of lands along the Missouri River need to occur to mitigate the resources lost to channelization and bank stabilization.

Development of the Baltimore Bottom Construction Project for fish and wildlife habitat would contribute to achieving the goals and purposes of the Mitigation Program to help mitigate for the loss of habitat that resulted from the BSNP.

1.3 SITE SELECTION

Real Estate Design Memorandum No. 1 (1990) and Supplement No. 1 to Real Estate Design Memorandum No. 1 (2002) established site selection criteria for the Mitigation

Program. Further criteria resulted from the Joint Real Estate Project Management Plan (2002), the SEIS (2003), and the Program Management Plan (PgMP; 2005). The criteria included the following:

- The land in private ownership could be acquired from willing sellers.
- The size of the area was greater than 100 acres.
- The area would not adversely affect navigation, carrying capacity of existing levees, or flood-carrying capacity of the existing floodway.
- The area was a large contiguous tract suitable for terrestrial woodland, grassland, and wetland development, with a remnant chute and backwater that could be restored.
- Emphasis on acquiring the remaining larger contiguous tracts of bottomland timber, areas of wetland or former wetland that could be restored, areas that could be developed to provide terrestrial forest and grassland habitat, and areas where chutes or backwaters could be restored.
- Acquisition of agricultural land should be limited except where the area has high potential for development or where a willing seller is available.
- Consideration will be given to the establishment or preservation of native floodplain prairie habitats.
- The area was part of the meander belt of the Missouri River.
- Public access to areas will not be a determining factor in acquisition.
- Sites chosen for establishment of wetlands will include enough adjacent land so that excessive sedimentation can be prevented and appropriate terrestrial non-forested habitat can be provided.
- Sites chosen for acquisition or development will be based on state and Federal agency input and support.
- Projected operation and maintenance costs will be considered in the selection of acquisition and development sites.

The Baltimore Bottom Construction Site was selected as a potential development site on review of historic and current aerial photography and on-site evaluations. The Baltimore Bottom Construction Site met the above stated criteria. In addition, the construction site was determined to have several attributes that made it favorable as a development site. These include its location in and around other protected sites (Cranberry Bend and the Baltimore Bend Conservation Area), opportunities to enhance the hydrology of existing wetlands, opportunities to create additional wetlands, and opportunities to create chutes and shallow water habitats for big river fish including the endangered pallid sturgeon. After preliminary investigations and studies were completed, the area was recommended for development planning by the Corps of Engineers and the US Fish and Wildlife Service (Service).

1.4 AGENCY COORDINATION

The Mitigation Program ACT meets quarterly. Representatives from the USFWS, Natural Resource Conservation Service (NRCS), Iowa Department of Natural Resources (IDNR), Kansas Department of Wildlife and Parks (KDWP), Missouri Department of Conservation (MDC), and the Nebraska Game and Parks Commission (NGPC) along with the Kansas City and Omaha Districts of the Corps comprise the ACT. The initial responsibility of the ACT was to develop selection criteria for screening and prioritizing general areas to identify willing sellers for potential mitigation sites. The ACT also meets to discuss future activities, priorities, funding, and other issues related to implementing, managing, and monitoring the Mitigation Program.

Coordination between the Kansas City District and the US Fish and Wildlife Service has been occurring throughout the planning process for development of the Baltimore Bottom Construction Site via telephone calls, emails, and meetings. An Agency coordination email, dated September 20, 2006, with an attached Draft of this PIR was sent to the appropriate Federal and state resource agencies requesting information and comment regarding the Proposed Action. A copy of this email and the Agency responses can be found in Appendix A.

On October 11, 2006, a description of the proposed project was circulated to the public and resource agencies through Public Notice No. 200602731 issued jointly by the Kansas City District and the Missouri Department of Natural Resources, Water Pollution

Control Program. The public notice included a thirty-day comment period that ended on November 10, 2006, and provided instructions for the public to provide comments on the proposed project. The public notice also included information on the Corps preliminary determination to prepare a Finding of No Significant Impact (FONSI) for the project and a draft Section 404(b)(1) Evaluation. A supplemental Public Notice No. 200602731, dated October 26, with a 15-day comment period ending on November 10, 2006, was also circulated to provide additional information on the project. These public notices were mailed to adjacent landowners, individuals/agencies/businesses listed on the NWK-Regulatory Branch's general, state of Missouri and Lafayette County mailing lists. The agencies provided information on Federally listed and proposed threatened and endangered species, state species of special concern, natural communities, and sites of historic or archeological significance. A copy of the public notices, list of recipients, and comments can be found in Appendix A of this Final PIR.

Chapter 2

Alternatives

2.1 INTRODUCTION

This chapter presents the alternatives considered for the development of fish and wildlife habitat at the Baltimore Bottom Construction Site. The Corps considered four alternatives including: 1) construction of one large chute, two small chutes, and one revetment chute (in three phases) through the project area, 2) development and enhancement of up to 1060 acres of emergent wetlands, with an additional native tree planting plan, 3) a combination of alternatives 1 and 2 (**PREFERRED**), and 4) the No Development Alternative. Alternatives one, two, and three represent the development alternatives. These alternatives were evaluated against their ability to fulfill the previously described site objectives. This chapter includes a description of each alternative, an evaluation of the alternatives, and a detailed description of the recommended alternative. The proposed alternative is slated for construction in three phases, where Phase I is the development of two small chutes (Chutes B and C), Phase II is the development of a large chute (Chute A) with creation and enhancement of approximately 1060 acres of emergent wetlands and native tree plantings, and phase III is the development of a revetment chute and bank notch. The following sections describe the alternatives developed for the Baltimore Bottom Construction Site.

2.2 ALTERNATIVES

2.2.1 ALTERNATIVE ONE

Alternative 1, the Chutes Alternative, consists of the construction of four chutes in three phases. These chutes were aligned in order to create a series of three new islands in addition to the

existing island on site, and to restore over nine miles of bank line which will greatly enhance aquatic habitat. Phase I involves the construction of two small chutes riverward of an existing non-federal levee (Hodge levee). These chutes, identified as chutes B and C, will be constructed at approximately 4,190 feet in length and 4,850 feet in length respectively, and will be linked to an existing natural chute located on-site. Initial design width of these chutes will be 75 feet but will be allowed to erode to approximately 125 feet in width. Invert elevations are designed at a maximum of -5 feet Construction Reference Plane (CRP) and will require the removal of approximately 319,000 and 354,000 cubic yards of material respectively. Chute B will impact approximately 2.5 acres of existing cottonwood, silver maple, sycamore, box elder, and willows trees, and 15.2 acres of grassland. Chute C will impact approximately 2.8 acres of existing cottonwood, silver maple, sycamore, box elder, and willows trees, and 17.4 acres of grassland. The entrance of Chute B will be located at Missouri River Mile 299.4 and exit at the midpoint of the existing chute near Missouri River Mile 298.5, where the entrance of Chute C will be located. Chute C will then reenter the Missouri River at Missouri River Mile 297.3. These chutes will be constructed with Corps hired labor crews.

Phase II involves the construction of a large chute identified as Chute A, which will be constructed at approximately 12,665 feet in length. Initial design width of this chute will be 75 feet but will be allowed to erode to approximately 200 feet in width. The invert elevation is designed at -6 CRP and will require the removal of approximately 750,000 cubic yards of material. Chute A will impact approximately 2.4 acres of existing cottonwood, silver maple, sycamore, box elder, and willows trees, and 760 acres of agricultural land. The alignment of this chute was selected in order to maximize chute length, allow the public access to the river at the upstream end of the chute, and prevent adverse impacts to private lands at the downstream end of the chute. The entrance and exit of Chute A will be located at Missouri River Miles 300.1 and 297.0, respectively, and will have a somewhat sinuous alignment consisting of four bends of variant curvature radii, and a chute length to river length ratio of 0.83. This chute will be constructed with contract labor.

Phase III involves the construction of a revetment chute and a shallow water habitat bank notch identified as Bank Notch D-305.5. The revetment chute and shallow water habitat bank notch will be constructed at approximately 1,720 in length. Initial design of the revetment chute and bank notch will be 75-feet and 100-feet, respectively; however, existing river structures will be designed to allow bank erosion to occur over time and widen to an ultimate base width of approximately 125 feet. Invert elevations are designed to a maximum of -5 feet CRP, and will

require the removal of approximately 119,600 cubic yards of material. The revetment chute and bank notch will impact approximately 4.5 acres of existing cottonwood, silver maple, sycamore, box elder, and willows trees. Trees removed along this excavation site will be cut into 30-foot maximum lengths and placed riverward of the revetment, with excavated soils placed over them. Root wads from the cleared trees will be placed into the existing open-water area landward of the revetment and between the revetment chute and bank notch to provide additional in-stream woody debris. The alignment of the revetment chute and bank notch was selected in order to increase the top-width of the river and allow river velocity through an otherwise stagnant area. The entrance and exit of the revetment chute will be located at Missouri River Mile 300.7 to 300.1, respectively. The revetment chute and bank notch will be constructed with Corps hired labor crews.

All four chutes and bank notch are designed to create approximately 76.2 acres of shallow water chute habitat immediately following construction, and approximately 128.7 acres of shallow water chute habitat after the four chutes erode to design width. Completion of the chutes will create shallow water habitat, improve aquatic and fisheries habitat, and provide additional connectivity with the Missouri River and its floodplain.

Construction of Chute A would be constructed using either a hydraulic dredge or terrestrial equipment, while Chutes B and C would be constructed using terrestrial equipment. Construction of the revetment chute and bank notch will be conducted utilizing a combination of track hoes and bull dozers. Any excavated material less than three inches in diameter will be discharged into to the Missouri River in four specific spoil areas (Figure 1), creating approximately 86 acres of temporary sandbar habitat. Any excavated material greater than three inches will be placed on and around the channel banks, or in rock hard points along the right bank of Chute A.

Material slated for removal below the Ordinary High Water Mark (OHWM) elevation of 668.2 feet at River Mile 300 and 665.7 feet at River Mile 297 includes approximately 1,423,000 cubic yards of sandy soil and 14,000 cubic yards of quarry run rock. Approximately 15,000 tons of quarry-run rock will be placed below the OHWM's for the Grade Control Structure to limit the final width of the chutes. The project would impact a total of approximately 12.5 acres of cottonwood, silver maple, sycamore, box elder, and willows trees, 52.4 acres of agricultural land, and 32.6 acres of grass land. Trees removed from the chute alignments will be placed in mounds at least 15 to 30 feet from the edge of the excavation, allowing the cleared trees to

eventually fall into the channels and diversify the aquatic habitat as the chutes erode to design width.

Using data on daily river stage, collected from the Waverly, Missouri monitoring station (River Mile 293.4), the proposed chutes will convey flow most of the time. Only rarely, and for short periods of time, will the chutes 'run dry'. Chute A will convey water 97.7 percent of the time, Chutes B and C will convey water 90.6 percent of the time, and the revetment chute will convey water approximately 95 percent of the time. Please refer to Appendix D for a graph depicting the outcome of stage and flow at the Waverly Gauge.

The monitoring, operation, and maintenance for the proposed chute construction are detailed in Section 2.4 of this report. Please refer to this section for a detail description of monitoring and the operation and maintenance plans.

2.2.2 Alternative Two

Alternative 2 consists of the creation and enhancement of wetlands. This would be accomplished with Missouri River floodplain reconnection through strategic breeches in Hodge Levee, removal of an existing pump station, and the construction of a stop-log structure enabling site managers to regulate the amount of flooding on the site. The breeches would help create wetland area and enhance existing wetland resources by providing a more reliable and frequent hydrology source (i.e. Missouri River) to the area. The proposed project will increase river connectivity to approximately 1060 acres of protected land from a 50-year frequency flood event to approximately a one-year frequency flood event. An existing pump station, located in the southeast corner of the site, will be removed and replaced with a stoplog structure to control water levels on the site and; thus, enhance the wetland resources of the site. Additional enhancement will be accomplished with vegetative plantings. Approximately 207 acres of farmland would be planted to forest using bottomland hardwood tree species (Please see Appendix D for planting specifications). The proposed project will create shallow water habitat, improve aquatic and fisheries habitat, and provide additional connectivity with the Missouri River and its floodplain. A large portion of the project will be constructed on lands with a Wetlands Reserve Program (WRP) easement to the NRCS, and this has been coordinated with the NRCS.

2.2.3 Third Alternative

Alternative 3, the **PREFERRED Alternative**, consists of both Alternative 1 and Alternative 2. Please see above for a detailed description of these alternatives.

2.2.4 No Development Alternative

The No Development alternative represents the alternative of no action by the Corps of Engineers. No additional activities to develop fish and wildlife habitat would be undertaken as part of the No Development alternative, although the U.S. Fish and Wildlife Service would continue to manage the area for fish and wildlife habitat. The USFWS currently holds fee title to the Baltimore Bottom Unit and is currently managing the land. Without future development activities, no additional floodplain reconnection would be established to the area and terrestrial habitats would recolonize naturally over many years, or according to USFWS management plans. This alternative could also be considered the natural succession alternative because the habitat that would develop at the site over the long-term would be solely dependent on the processes of natural succession acting on the area. There would be no increase in shallow water habitat with this alternative because no modifications to river structures would occur to allow erosion of the riverbank. This alternative would not reconnect the river to the floodplain except under conditions where river structures or levees are degraded and breached by natural river erosion and scour processes. No additional recreational features would be constructed, but the site would continue to contain public recreational uses such as fishing, bird watching, photography, hunting, and hiking.

2.3 EVALUATION OF ALTERNATIVES

Alternatives 1 and 2 would fulfill program goals of developing diverse fish and wildlife habitat in varying degrees. Alternative 3, the PREFERRED ALTERNATIVE, would fulfill all of the project goals by creating four chutes of various lengths, creating shallow water habitat for a variety of game and non-game fish and wildlife species, including the endangered pallid sturgeon, creating and enhancing over 1,060 acres of wetland habitat, re-connecting the Missouri River to its floodplain, planting up to 207 acres of bottomland hardwood trees, and aiding in flood damage reduction by allowing more water to contact the floodplain.

Alternatives 1 and 2 differ from Alternative 3 mainly in that they would achieve either chutes or wetland/terrestrial habitat, but not both. The No Development Alternative would not establish

shallow water chutes, shallow water habitat areas, wetlands, or reconnect the Missouri River to its floodplain.

All three of the build alternatives would provide environmental benefits but would vary primarily in the magnitude of benefits achieved. Alternative 3 provides the best opportunity for the creation of fish and wildlife habitat. Resting, foraging, sheltering, spawning, and rearing habitat would be provided throughout the year, particularly during the spring when water levels rise and flow on to the adjacent floodplain. Minimal benefits to fisheries would be realized from the No Development alternative. Short-term impacts to air, noise, water quality, and soils related to construction activities would occur with all of the build alternatives. These impacts would be minimal and considered construction related. All three build alternatives would result in beneficial impacts to recreational opportunities in the project area, and incremental benefits to lowering flood stages in the Missouri River as a result of the newly cut chutes and/or breaches in Hodge Levee. Continued regional benefits from increased floodwater retention capacity on the Missouri River floodplain would provide incremental flood protection for residences and properties downstream. These beneficial impacts would vary by alternative mainly due to the construction of chutes, wetlands, or both. A differing amount and diversity of quality habitats would be realized by each build alternative. Over time, it is anticipated that there would be an increase in fishing, hunting, bird watching, and other public uses both on the river and on land. The amount and diversity of quality habitat resulting from the No Development Alternative would be dependent on natural succession. For all three build alternatives, the diversity of both game and non-game species would be dependent on the types of habitat created and the management practices associated with each alternative. All three of the build alternatives may have short-term adverse impacts to pallid sturgeon and bald eagle in the form of disturbance during construction. Any disturbance would be temporary in nature and would cease when construction has been completed. Additionally, because the proposed project area contains nearby shallow water habitat areas (Cranberry Bend) and large expanses of cottonwood, silver maple, sycamore, box elder, and willows trees, impacts to the normal behavior of the pallid sturgeon and eagle will be minimal. When completed, the project will provide increased aquatic habitat for sheltering, foraging, nesting, spawning, rearing and roosting; therefore, the proposed project is likely to benefit the pallid sturgeon and bald eagle. None of the alternatives would affect navigation on the Missouri River.

Alternative 3 was selected for implementation at the Baltimore Bottom Chute Construction Site. This alternative was recommended because it fulfills all of the program and site-specific goals

for the Baltimore Bottom Chute Construction Site, maximizes chute, wetland and terrestrial acreage, avoids impacts to private lands, and results in no significant adverse impacts to the environment.

Certain species may be temporarily displaced during construction of project features but would likely return to the area after construction is complete. Species of limited mobility may be destroyed as they are unable to escape construction activities. No adverse impacts to fish species are anticipated. The creation of additional and more diverse and productive habitat types are anticipated to benefit fish and wildlife so any impacts to species (displacement, avoidance, disturbance, etc.) during construction would be considered insignificant. Terrestrial habitat would continue to be abundant for many bird and mammal species. Reptiles, and particularly amphibians, are expected to benefit greatly because of the additional aquatic habitat and nutrients that would develop. Fish species, including the pallid sturgeon, are likely to benefit from increased habitat, food sources, and nutrients that are developed and washed into the river following high precipitation events. Long-term and cumulative impacts to fish and wildlife resources are expected to be beneficial because of the expected increase in habitat types and abundance.

Table 2-1. - Comparison of Environmental Consequences of Alternatives Evaluated

Environmental and Socioeconomic Resources	Alternative 1	Alternative 2	Alternative 3 PREFERRED	No Development Alternative
Topography	Insignificant impacts through changes in surface topography. Beneficial impacts through conversion of agricultural lands to chutes and SWH.	Insignificant impacts through changes in surface topography. Beneficial impacts through conversion of agricultural lands to wetland habitat.	Insignificant impacts through changes in surface topography. Beneficial impacts through conversion of agricultural lands to chutes, SWH, and wetlands.	No impacts
Soils	Insignificant, short-term, and construction related impacts resulting from the loss of soils during construction and by scour action.	Insignificant, short-term, and construction related impacts resulting from the loss of soils during construction and by scour action.	Insignificant, short-term, and construction related impacts resulting from the loss of soils during construction and by scour action.	No impacts

Environmental and Socioeconomic Resources	Alternative 1	Alternative 2	Alternative 3 PREFERRED	No Development Alternative
Aquatic Resources	Short-term construction-related impacts from river structure modifications resulting in increases in turbidity impacting water temperatures and dissolved oxygen content. Minor short-term beneficial impacts resulting from increased sediment load, sandbar creation, accretion – depletion episodes in the Missouri River simulating historic conditions and increased turbidity lowering light transmission for species adapted to these conditions. Long-term beneficial impacts resulting from the creation of chute and SWH.	Short-term construction-related impacts breeches in Hodge Levee. Long-term beneficial impacts resulting from the creation of wetland habitat.	Short-term construction-related impacts from river structure modifications resulting in increases in turbidity impacting water temperatures and dissolved oxygen content. Minor short-term beneficial impacts resulting from increased sediment load, sandbar creation, accretion - depletion episodes in the Missouri River simulating historic conditions and increased turbidity lowering light transmission for species adapted to these conditions. Long-term beneficial impacts resulting from the creation of chute and SWH.	Adverse impacts as no chute, SWH, or wetlands would be created.
Terrestrial/Wetland Resources	Short-term impacts resulting from disturbance during construction. Long-term beneficial impacts resulting from the increase in quality habitat.	Short-term impacts resulting from disturbance during construction. Long-term beneficial impacts resulting from the increase in quality habitat.	Short-term impacts resulting from disturbance during construction. Long-term beneficial impacts resulting from the increase in quality habitat.	Long-term beneficial impacts resulting from natural succession of terrestrial habitat.

Environmental and Socioeconomic Resources	Alternative 1	Alternative 2	Alternative 3 PREFERRED	No Development Alternative
Wildlife	Insignificant short-term impacts resulting from disturbance during construction. Long-term beneficial impacts through the creation of wildlife habitat.	Insignificant short-term impacts resulting from disturbance during construction. Long-term beneficial impacts through the creation of wildlife habitat.	Insignificant short-term impacts resulting from disturbance during construction. Long-term beneficial impacts through the creation of wildlife habitat.	Long-term beneficial impacts resulting from development of wildlife habitat through natural succession.
Threatened and Endangered Species **(Bald Eagle, Indiana Bats, Pallid Sturgeon)**	Short-term insignificant impacts resulting from disturbance to species during construction. No adverse affects anticipated. Long-term beneficial impacts resulting from the creation of valued habitats (aquatic and terrestrial).	Short-term insignificant impacts resulting from disturbance to species during construction. No adverse affects anticipated. Long-term beneficial impacts resulting from the creation of valued habitats (aquatic and terrestrial).	Short-term insignificant impacts resulting from disturbance to species during construction. . No adverse affects anticipated. Long-term beneficial impacts resulting from the creation of valued habitats (aquatic and terrestrial).	Adverse impact as no SWH or wetland habitat would be created. Long-term beneficial impacts from the increase of valued terrestrial habitats through natural succession.
Land Cover **Agricultural Land**	No significant adverse impacts Insignificant adverse affects to local economy through the loss of Agricultural land.	No significant adverse impacts Insignificant adverse affects to local economy through the loss of Agricultural land.	No significant adverse impacts Insignificant adverse affects to local economy through the loss of Agricultural land.	No significant adverse impacts No affects to the local economy.
Historic Properties and Archaeological Sites	No impact.	No impact.	No impact.	No impact.

Environmental and Socioeconomic Resources	Alternative 1	Alternative 2	Alternative 3 PREFERRED	No Development Alternative
Water Quality	Short-term insignificant impacts resulting from increased sediment load. Long-term beneficial impacts resulting from enhancing river habitats.	Short-term insignificant impacts resulting from increased sediment load. Long-term beneficial impacts resulting from enhancing existing wetlands.	Short-term insignificant impacts resulting from increased sediment load. Long-term beneficial impacts resulting from enhancing existing wetlands and river habitats.	No impacts.
Air Quality	Short-term insignificant impacts resulting from increased emissions and fugitive dust during construction.	Short-term insignificant impacts resulting from increased emissions and fugitive dust during construction.	Short-term insignificant impacts resulting from increased emissions and fugitive dust during construction.	No impact.
Noise	Short-term insignificant impacts resulting from increased noise during construction.	Short-term insignificant impacts resulting from increased noise during construction.	Short-term insignificant impacts resulting from increased noise during construction.	No impact.
Population and Income	Insignificant beneficial impacts to local economy during and after construction through increased spending.	Insignificant beneficial impacts to local economy during and after construction through increased spending.	Insignificant beneficial impacts to local economy during and after construction through increased spending.	No impacts.
Recreation and Aesthetics	Short-term insignificant impacts resulting from the inaccessibility of the site during construction. Long-term beneficial impacts resulting from increased recreational opportunities, habitat, and greater diversity of features.	Short-term insignificant impacts resulting from the inaccessibility of the site during construction. Long-term beneficial impacts resulting from increased recreational opportunities, habitat, and greater diversity of features.	Short-term insignificant impacts resulting from the inaccessibility of the site during construction. Long-term beneficial impacts resulting from increased recreational opportunities, habitat, and greater diversity of features.	No impacts.

Environmental and Socioeconomic Resources	Alternative 1	Alternative 2	Alternative 3 PREFERRED	No Development Alternative
Navigation	No impacts.	No impacts.	No impacts.	No impacts.

DESCRIPTION OF RECOMMENDED ALTERNATIVE

The following list of activities would be part of the recommended alternative (Alternative 3). The approximate locations of the new side channel chutes and shallow water habitat development along the Missouri River are shown in Figure 1-1. Final locations would be completed during detailed design of the Baltimore Bottom Chutes Construction Site.

- The construction of shallow water habitat in the Missouri River through excavation and spoil placement would be completed and would likely result in the creation of a maximum of approximately 85.5 acres of temporary sandbar habitat. The construction of shallow water chute habitat would result in the loss of existing habitats, predominantly cottonwood, silver maple, sycamore, box elder, and willows trees, as these trees would be removed for chute construction and lost to erosion.

- The construction of the new side channel chutes on the Missouri River would create additional habitat. Conceptually, the side channel chutes would consist of notching existing bank revetments and pile dikes and excavating a 75-foot minimum width channel with steep (to be determined) side slopes. The maximum scour width would be approximately 125 feet for the small chutes and bank notch, 125 feet for the revetment chute, and 200 feet for the large chute. The side channel chutes would be approximately 12,665 feet; 4,190 feet; and 4,850 feet long, and the revetment chute would be approximately 1,720 feet. Grade control structures would be installed to limit the scour of the chute's banks, as described above; however, some natural meandering may develop over time. The side channel chutes would provide additional hydraulic connection to the Missouri River floodplain and would increase the quantity and quality of shallow water habitat to maximize aquatic and fisheries at the site. It is estimated that 76.2 to 128.7 acres of additional shallow water habitat would be created from the construction of the new side channel chutes, revetment chute, and bank notch. Construction of the side channel chutes would be designed to prevent the sloughs from capturing significant amounts of silt and debris, and to allow them to be self-maintaining.

- The construction and enhancement of up to approximately 1,060 acres of wetland habitat through strategic breeches in Hodge Levee to provide increased hydrology to the area.
- The planting of up to 207 acres of bottomland hardwood trees (Appendix D) along with the revegetation of disturbed construction related areas utilizing native grassland species.
- Long-term maintenance of existing and newly created habitats would be performed.
- Monitoring of the habitat improvements would be performed. Monitoring and evaluation of the Baltimore Bottom Chutes Construction Site is discussed further in Section 5.2, Monitoring and Evaluation (M&E) Plan.
- Adaptive management of the Baltimore Bottom Chutes Construction Site would be performed. For the purposes of this PIR and the management of the Baltimore Bottom Chutes Construction Site, adaptive management would be defined as the adaptation of techniques to better meet the desired results for the site. Adaptive management would be used to help achieve the desired conditions identified for the Baltimore Bottom Chutes Construction Site, not to change the goals identified for the site. Adaptive management is an overarching process whereby an experiment is formulated to test a particular hypothesis, the site is monitored, data is collected and analyzed, and the experiment reformulated, as required, based on the results. The refuges Comprehensive Conservation Planning process will eventually develop formal goals for the site. Given the purpose of the refuge (i.e., to restore and conserve native habitats and dynamic river processes of the Missouri River), it is entirely possible that there may not be a static end point, but rather a suite of riverine and floodplain habitats that occur over the long run at the refuge.

Chapter 3

Affected Environment

3.1 INTRODUCTION

This chapter presents the affected environment for the Baltimore Bottom Chutes Construction Site. The affected environment is the baseline against which potential beneficial and adverse impacts caused by the action are evaluated. The existing conditions described in this chapter for the Baltimore Bottom Unit are based on the current state of the site and not as the site was at the time of purchase by the USFWS. Various sources of information were used to compile the affected environment presented in this chapter including: field investigations, geographic information systems data, literature searches, review of maps and aerial photography, agency coordination, and previous reports.

3.2 HISTORY OF THE PROJECT AREA

Prior to construction of the BSNP, the lower Missouri River was uncontrolled and meandered across the floodplain. This created a highly dynamic environment through the physical processes of erosion, deposition, and accretion. The historical lower Missouri River consisted of numerous islands, channels, sandbars, and slack water supporting vegetation in various stages of succession. Historically, the Baltimore Bottom Unit would have consisted of an area where the meander of the Missouri River across the floodplain would have resulted in a dynamic area. In addition, the proportions of habitat types would have been constantly changing due to the physical processes mentioned previously. Following construction of the BSNP, accreted lands in the area of the Baltimore Bottom Unit were created, claimed, and converted to cropland. At the time

of purchase by the USFWS, the Baltimore Bottom Unit was primarily woodland, grassland, and cropland. The lands were purchased from willing sellers on October 8, 2002. The USFWS has managed the site since the time of its purchase, through low maintenance operations in order to let the land recover to pre-agricultural conditions on its own.

3.3 GEOLOGICAL RESOURCES

The geological resources include the physical surface and subsurface features of the Baltimore Bottom Unit such as topography, geology, and soils.

3.3.1 TOPOGRAPHY

The Baltimore Bottom Unit lies within the Dissected Till Plains (Missouri River Alluvial Plains subsection) of the Central Lowlands physiographic province (USGS 2003). Generally, the topography of the area is fairly level due to historic flooding, erosion patterns, and controlled drainage associated with a floodplain location. Drainage for the site is achieved naturally, through sandy and silty loam soils.

3.3.2 GEOLOGY

The Baltimore Bottom Unit is situated within a complex system of natural alluvial deposition and erosion resulting from the changing course of the Missouri River in geologic time; however; construction of the BSNP caused significant amounts of human induced alluvial deposition and erosion to occur in a relatively short period of time (less than 100 years). The site is located within one of the narrowest parts of the lower reaches (below the mouth of the Platte River in Nebraska) of the Missouri River valley where the valley generally ranges from five to seven miles wide (Dahl 1961). The Missouri River flows across Pennsylvanian strata in the general area of the site. Pennsylvanian strata are comprised of sandstone, shale, limestone, clay, and coal deposits (Schaper 2002).

Overlying the bedrock in the general area of the Baltimore Bottom Unit are typically alluvial clays; sand and gravels, with a few poorly consolidated sandstones; glacial (ice deposited) tillites and gravels; and eolian (wind blown) clays and loess of the Tertiary/Quaternary Period (Shaper 2004).

The floodplain deposits in the river valley bottom consist of geologically recent unconsolidated alluvium. In general, the alluvium can consist of upper zones of fine-grained clays and silts and deeper zones of coarser grained sands. Past river meanders have left a system of remnant channels, and sandbars, many of which have been filled in with river sediments and by man.

3.3.3 Soils

The soils in the Baltimore Bottom Unit are made up of a variety of different types, and the following information is based on 2006 SSURGOII soil information. The soils types include Riverwash, Hodge loamy fine sand, Haynie silt loam, Waubonsie, Leta silty clay, Waldon silty clay loam, Myrick silty clay, and Ray silt loam. Riverwash consists of moderately well drained hydric soils that are not highly erodible by water or wind. Riverwash soils are formed in alluvium located on flood plains of river valleys under tree cover. The surface water runoff is negligible and the natural drainage condition of the soil is moderately well drained. Hodge loamy fine sand consists of somewhat excessively drained, partially hydric soils that are not highly erodible by water or wind. Hodge loamy fine sand soils are formed in alluvium located on flood plain of river valleys under tree cover and other grass covered areas. The surface water runoff is negligible and the natural drainage condition of the soil is somewhat excessively drained. Haynie silt loam consists of well drained, non-hydric soils that are not highly erodible by wind or water. Haynie silt loam soils are formed in alluvium located on flood plains or river valleys under tree cover and other grass covered areas. The surface water runoff is negligible and the natural drainage condition of the soil is well drained. Waubonsie soils consist of moderately well drained non-hydric soils that are not highly erodible by water or wind. Waubonsie soils are formed in alluvium located on flood plains of river valleys under tree cover. The surface water runoff is negligible and the natural drainage condition of the soil is moderately well drained. Leta silty clay consists of somewhat poorly drained non-hydric soils that are not highly erodible by water or wind. Leta silty clay soils are formed in alluvium located on flood plains of river valleys under tree cover and other grass covered areas. The surface water runoff is negligible and the natural drainage condition of the soil is somewhat poorly drained. Waldron silty clay soils consist of somewhat poorly drained non-hydric soils that are not highly erodible by water or wind. Waldon silty clay soils are formed in alluvium located on flood plains of river

valleys under tree cover. The surface water runoff is negligible and the natural drainage condition of the soil is somewhat poorly drained. Myrick silty clay soils consist of poorly drained, partially-hydric soils that are not highly erodible by water or wind. Myrick silty clay soils are formed in clayey over loamy alluvium located on flood plains of river valleys under tree cover, grass cover, and herbaceous cover. The surface water runoff is negligible and the natural drainage condition of the soil is poorly drained. Ray silt loam soils consist of well drained non-hydric soils that are not highly erodible by water or wind. Ray silt loam soils are formed in alluvium located on flood plains of river valleys under tree cover. The surface water runoff is negligible and the natural drainage condition of the soil is moderately well drained.

3.4 PRIME AND UNIQUE FARMLAND

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed crops, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion [7 U.S.C. 4201 (c)(1)(A)]. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding (USDA 1993). Congress passed the Farmland Protection Policy Act (PL 97-98; 7 U.S.C. 4201 et seq.) with the stated purpose of minimizing the unnecessary and irreversible conversion of farmland to nonagricultural uses by Federal programs. The Baltimore Bottom Unit contains the following soil types, which are listed as prime farmland soils: Haynie silt loam, Waubonsie, Leta silty clay, Waldron silty clay, and Ray silt loam. Additionally, the Baltimore Bottom Unit contains the following soil types, which are listed as farmland soils of statewide importance: Hodge loamy fine sand and Myrick silty clay. These soil types comprise most of the area of the Baltimore Bottom Unit with the exception of the area of Riverwash along the northern part of the site and south of the Missouri River.

3.5 BIOLOGICAL RESOURCES

Biological resources include the native or introduced plants and animals and the habitats in which they occur. The resources discussed in this section include aquatic resources including fisheries; terrestrial/wetland resources including vegetation communities, wildlife populations; and species that are listed as threatened or endangered.

3.5.1 AQUATIC RESOURCES

Aquatic resources include aquatic habitat, fisheries, and other aquatic biota of the Baltimore Bottom Unit. Aquatic habitat on the Baltimore Bottom Unit consists of the Missouri River, which borders the site, shallow water habitat located along the southeast corner of the site, and approximately 5.5 acres of open water habitat. Principal fish species in the lower Missouri River include emerald shiner (*Notropis* atherinoides), river carpsucker (*Carpiodes* carpio), channel catfish (*Ictalurus* punctatus), gizzard shad (*Dorosoma* cepedianum), red shiner (*Notropis* lutrensis), shorthead redhorse (*Moxostoma* macrolepidotum), carp (*Cyprinus carpio), and* golden eye (*Hiodon* alosoides) (Pflieger 1975). Pallid and shovelnose sturgeon and paddlefish (*Polyodon* spathula) are also found in the lower Missouri River (Corps 2001).

Sport fish include channel catfish, white crappie (*Pomoxis annularis*), black crappie (*Pomoxis nigromaculatus*), sauger (*Stizostedion canadense*), flathead catfish (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), walleye (*Stizostedion vitreum*), northern pike (*Esox lucius*), and paddlefish (Pflieger 1975). Species important to the commercial fishery on the lower Missouri River include buffalo (*Ictiobus* spp.), carp, and freshwater drum (*Aplodinotus grunniens*); (Corps 1995).

3.5.2 TERRESTRIAL/WETLAND RESOURCES

Currently, the Baltimore Bottom Unit contains no side channels or chutes. Approximately 5.5 acres of the site are ponds and scour holes. Approximately 21.5 acres are developed and approximately 3 acres are barren. Approximately 179 acres consist of deciduous forest, 9.5 acres are shrub lands, and 475 acres are grasslands. Approximately 34.5 acres are considered wetlands. These wetlands consist of 6.37 acres of forested wetlands, 15.4 acres of emergent wetlands, and 12.69 acres are shrub scrub wetlands. Approximately 911 acres are cultivated.

3.5.3 WILDLIFE

The Baltimore Bottom Unit provides habitat for numerous wildlife species. Common mammalian species likely to occur in remnant bottomland forest and agricultural fields within the site include; gray squirrel (*Sciurus carolinesis*), cottontail rabbit (*Sylvilagus*

floridanus), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*) and white-tailed deer (*Odocoileus virginianus*).

Common furbearers likely to occur within the site include: mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), beaver (*Castor Canadensis*), otter (*Lontra Canadensis*), and raccoon (*Procyon lotor*). Other furbearers expected to occur within the site include: opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), and long-tailed weasel (*Mustela frenata*).

Upland game birds expected to occur within the site include bobwhite quail (*Colinus virginianus*), and wild turkey (*Meleagris gallopavo*). Common songbirds likely to occur within the site include mourning dove (*Zenaida macroura*), American robin (*Turdus migratorius*), eastern kingbird (*Tyrannus tyrannus*), American goldfinch (*Carduelis tristis*), red-winged blackbird (*Agelaius* phoeniceus), eastern bluebird (*Sialia* sialis), northern cardinal (*Cardinalis cardinalis*), northern oriole – Baltimore race – (*Icterus galbula*), and brown thrasher (*Toxostoma rufum*), among others. The Big Muddy National Fish and Wildlife Refuge maintains a list of neotropical migratory species that are particularly important at the site. It is interesting to note the greater than average numbers and diversity of species that occur at the site.

The Missouri River Valley is an important nesting and feeding area along the Central Flyway for many migratory waterfowl species including wood duck (*Aix sponsa*), blue-winged teal (*Anas discors*), green-winged teal (*Anas crecca*), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*), northern pintail (*Anas acuta*), Canada goose (*Branta Canadensis*), and snow goose (*Chen caerulescens*), among others. In additional to these fairly common species, the management of the Refuge by the U.S. Fish and Wildlife Service has resulted in a greater diversity and abundance of neotropical migratory species. The reader may obtain a list of these species by contacting the Big Muddy National Fish and Wildlife Refuge.

3.5.4 Threatened and Endangered Species

Information was requested from the USFWS and the MDC via Public Notices No. 200602731 and in an email dated September 12, 2006 (Appendix A), regarding Federally and state listed threatened, endangered, and species of special concern that have potential to occur at the Baltimore Bottom Construction Site. Comments from

these agencies are included in Appendix A. Table 3-1 provides the listed species that have the potential to occur on or adjacent to the project site according to the resource agencies.

Table 3-1. - Federal and State listed species with potential to occur on or adjacent to the Baltimore Bottom Chute Construction Site

Common Name	Scientific Name	Status
Bald Eagle	*Haliaeetus leucocephalus*	Federally Threatened State Endangered
Pallid Sturgeon	*Scaphirynchus albus*	Federally Endangered State Endangered
Indiana Bat	*Myotis sodalist*	Federally Endangered State Endangered
American Bittern	*Botaurus lentiginosus*	State Endangered
Flathead Chub	*Platygobio gracilis*	State Endangered

Bald eagles are common migrants and regular winter residents along the Missouri River. Bald eagles may utilize the riparian woodlands in the Baltimore Bottom area for nesting, perching, and roosting sites. Bald eagles are currently listed as threatened; however, the species was proposed for delisting in 1999. The decision for delisting has been delayed until the USFWS determines how the species would be managed if delisted.

The pallid sturgeon generally occurs in the main channel of the large, turbid, free-flowing Missouri River, in the lower segments of some major tributaries, and in the shallow water of these areas. Modification of the natural Missouri River hydrograph, habitat loss, fish migration blockage, pollution, hybridization, and over harvesting are likely responsible for pallid sturgeon decline (USFWS 1993). Naturally occurring side channels and chutes that provide shallow water habitat for pallid sturgeon spawning have been greatly reduced in the channelized Missouri River as a result of the BSNP.

Since 2004, biologists from the Columbia Fishery Resources Office and the Missouri Department of Conservation have surveyed sites adjacent to the Baltimore Bottom area for the presence of pallid sturgeon. In 2004, the USFWS collected one pallid sturgeon at Cranberry Bend, River Mile 281.4, and MDC collected one pallid sturgeon at Moberly

Bend, River Mile 299.1, in 2005. Although the pallid sturgeon collections conducted in these areas merely represent snap shots in time, they do provide valuable information on the usage of the area as possible foraging, sheltering, or migratory habitat.

The Indiana bat spends the winter hibernating in caves in the Ozarks. During April and May, females migrate north and establish small maternity colonies in suitable sites within wooded riparian areas, floodplain forests, or upland woodlots. The bats roost in trees with loose or exfoliating bark and in dead oaks, hickories, elms, green and white ash, silver maple, and eastern cottonwood, and in living shagbark hickories. Preferred roost sites are located in forest openings, at the forest edge, or where tree canopy is sparse, and within 1 kilometer of water. The Indiana bat forages in and around the tree canopy of floodplain, riparian, and upland forests. Habitat conditions at the Baltimore Bottom Chute Construction site currently may be conducive to Indiana bat. However, during a pre-construction survey conducted on September 27, 2006 by biologists from the Corps of Engineers, no evidence of large diameter trees (14-16 inches) with exfoliating bark were identified. However, some large, dead cottonwood species were noted onsite but were located in areas outside of proposed tree clearing.

The American bittern use tall, dense, shallow- or deep-water emergent vegetation in permanent wetlands and wet meadows, and tall, dense vegetation in uplands adjacent to wetlands to breed and shelter. Breeding generally occurs from mid-April to early July, and the species begin to leaving for wintering grounds in August. American bitterns prey on large insects, small fish and mammals, amphibians, and crayfish.

The Flathead Chub is found in turbid rivers and streams and prefers channel borders and side channel chutes. They are found in both riffles and pools. Distinguishing characteristics include barbels or "whiskers" at each corner of its mouth, a flattened head, and a streamlined appearance, which are adaptations for living in fast moving water. Flathead chub preys mostly on aquatic invertebrates although some vegetation is included in its diet. Sexual maturity is reached in year two with spawning likely occurring in July.

3.6 LAND COVER

The land cover at the Baltimore Bottom Unit currently contains approximately 1,626 acres of habitat conducive to a variety of fish and wildlife species. Exact habitat types

are detail above in Section 3.5.2, Terrestrial/Wetland Resources. Areas of channels and chute remnants, developed and barren lands, shrub land, grassland, forest, and a variety of wetlands vegetation occur within the overall project area. The sites where the new chutes will be constructed consist primarily of agricultural and grass lands.

3.7 CULTURAL RESOURCES

Cultural resources are defined as any area of past human activity, occupation, or use, identifiable through inventory, historical documentation, or oral evidence. Cultural resources include, but are not limited to, archeological sites, buildings or structures, cemeteries, and traditional cultural properties.

A background review of the project area was conducted to determine if any previously recorded cultural resources were present in the Baltimore Bottom project area. This research included a review of the National Register of Historic Places (NRHP), archeological and historic structure site location maps at the Missouri State Historic Preservation Office (SHPO), and shipwreck location maps in the Kansas City District office.

The review found no NRHP listed sites within or near the project area. A review of Lewis and Clark campsites found that the Corps of Discovery camped within the present project area on September 16, 1806. The campsite was along the south side of a large island on the north side of the old river channel. It is unlikely that any trace of the camp site remains as both the 1879 and 1892 river channels crossed the recorded camp location. In addition, a review of these and other historic Missouri River channel location maps found that the entire project area is entirely accreted land and not likely to contain buried archeological deposits. No ship wrecks are recorded within or near the proposed project area.

The entire proposed project area is part of the Big Muddy National Fish and Wildlife Refuge in Lafayette County, Missouri. Coordination with the Missouri SHPO was initiated by letter on August 8, 2006 (Appendix A). Because the project area consists of recently accreted lands and therefore has a low probability of containing intact archeological sites or historic structures, the Kansas City District recommended that the project would have no effect on properties listed on or eligible for inclusion on the NRHP and that the project proceed without further SHPO consultation. SHPO concurred with

this recommendation in a letter dated August 14, 2006 (Appendix A). The project has been coordinated with affiliated federally recognized Native American Tribes (Tribes). However, if design changes are made that would involve additional new right-of-way or easements, further coordination with the SHPO and the Tribes would be required. In the unlikely event that archeological material or human remains are encountered during construction, work in the area of discovery shall cease and the discovery investigated and coordinated with SHPO and the Tribes.

3.7.1 Historic Properties and Archaeological Sites

No archeological sites or historic structures are recorded in the project area. Because the project area consists of recently accreted land, no historic properties are likely for the project area.

3.7.2 Shipwrecks

No shipwrecks have been recorded as occurring within the vicinity of the project area.

3.8 WATER QUALITY

The most recent water quality survey conducted by the Corps (July 1991) measured temperature, pH, dissolved oxygen, and total suspended solids twice over a two-weak period in August and September 1990. Temperature ranged from 29 degrees Celsius (°C) to 27°C; pH was 8.1 to 8.2; dissolved oxygen was 9.8 milligrams per liter (mg/l) to 8.0 mg/l; and total suspended solids were measured at 97 mg/l and 46 mg/l. These results were fairly consistent with those from other collection points along the Missouri River; however, there was no explanation provided for the large differences in total suspended solids between the sampling events.

These parameters have an effect on the fisheries in the Missouri River. High temperatures decrease the amount of dissolved oxygen. The temperature for the Missouri River must not be above 32.2 °C and the dissolved oxygen concentration must not be below 5.0 mg/l based on Federally approved water quality standards (Corps 1994). Section 303(d) of the Water Quality Act requires states to identify waters for which existing required pollution controls are not stringent enough to meet state water quality standards. States are required to establish total maximum daily loads (TMDLs)

for these waters (see 40 CFR 130.7). The state of Missouri has placed the Missouri River on the 303(d) List of Impaired Water Bodies due to fish and wildlife habitat loss.

3.9 AIR QUALITY

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere. The quality of the air is measured against National Ambient Air Quality Standards (NAAQS) set by the U.S. Environmental Protection Agency. The Baltimore Bottom Unit is located in an attainment area, which is an area wherein the concentrations of all criteria pollutants meet the NAAQS.

3.10 NOISE

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are designated as noise. Noise can be stationary or transient and intermittent or continuous. The Baltimore Bottom Unit is located in a rural setting. Existing noise levels in the proposed project area are highly variable. Noise sources may include traffic from Highway 24 and Country Road 227, distant railroad sounds, aircraft over flights, and natural sounds such as wind through trees, flowing water from the Missouri River, and sounds from wildlife. Lands surrounding the proposed site include agricultural lands, conservation areas, and other private lands.

3.11 SOCIOECONOMIC RESOURCES

Socioeconomic resources are the part of the human environment that includes the economic, demographic, and social characteristics of individuals and communities.

3.11.1 POPULATION AND INCOME

As of the census of 2000, there were 32,960 people, 12,569 households, and 9,099 families residing in Lafayette County. The racial makeup of the county was 95.52% White, 2.27% Black or African American, 0.29% Native American, 0.25% Asian, 0.03% Pacific Islander, 0.51% from other races, 1.12% from two or more races, and 1.17% were Hispanic or Latino.

The population was spread out with 26.20% under the age of 18, 7.60% from 18 to 24, 27.50% from 25 to 44, 23.30% from 45 to 64, and 15.40% who were 65 years of age or

older. The median age was 38 years old. For every 100 females, there were 95.90 males. The median income for a household in the county was $38,235, and the median income for a family was $45,717. Males have a median income of $31,972 verses $22,684 for females. The per capita income for the county was $18,493. A total of 8.80% of the population and 6.90% of families were below the poverty line.

3.11.2 Recreation and Aesthetics

The Baltimore Bottom Unit is managed by the USFWS as part of The Big Muddy National Fish and Wildlife Refuge. The USFWS allows approved recreational activities for the public at the site such as hunting, fishing, nature study, wildlife viewing, photography, hiking, and nature walking.

The aesthetics of the Baltimore Bottom Unit are typical of many rural areas along the Missouri River. Riparian woodlands, wetlands, agriculture, and grasslands make up the area and surrounding landscape. The Missouri River, shallow water areas, and chutes are an important visual resource and make up the surrounding waterscape.

3.11.3 Navigation

Missouri River flows are managed in part, for commercial navigation on the Missouri River. Navigation on the Missouri River is limited to the normal ice-free season, with a full-length flow support season of 8 months (Corps 2001). At Sioux City, the full-length support season extends from March 23 to November 22 and at St. Louis the full-length support season extends from April 1 to December 1 (Corps 2001).

Chapter 4
Environmental Consequences

4.1 INTRODUCTION

This chapter presents the evaluation of beneficial and adverse impacts of the alternatives including if there is the potential for significant impacts of the Federal action on the human environment. The analysis focused on identifying types of impacts and estimating their potential significance in various environmental and socioeconomic resource areas. The environmental impacts of the implementation and site selection process for the Mitigation Program were previously evaluated and documented in the *Feasibility Report and Environmental Impact Statement* (Corps 1981) and the *Supplemental Environmental Impact Statement* (Corps 2003). Thus, this PIR only evaluates those impacts anticipated from the construction and operation of the alternatives specific to the Baltimore Bottom Chute Construction Site. The environmental effects presented in this chapter would be the same for all build alternatives unless noted otherwise.

The concept of "significance" used in this chapter encompasses several factors, including the magnitude of change from existing conditions and the likelihood of the change to occur. An impact is considered adverse when the outcome of the action results in undesirable effects. A beneficial impact can result if the current condition is improved or if an existing undesirable effect is lessened.

Adverse impacts can be mitigated by different means such as through avoidance or minimization of adverse effects. Beneficial and adverse impacts, including unavoidable adverse effects, are discussed in each resource section of this chapter.

4.2 GEOLOGICAL RESOURCES

Geological resources are limited, non-renewable resources whose characteristics can easily be degraded by physical disturbances. An impact to geological resources would be significant if it depletes a regional or local resource, affects the rate of erosion, changes the characteristics of the soil, or becomes a less natural condition. Geological resources on the Baltimore Bottom Unit would be affected from ground disturbance associated with river structure modifications, construction and erosion of side channel chutes, levee notching and wetland enhancement, and shallow water habitat creation.

4.2.1 TOPOGRAPHY

The topography of the Baltimore Bottom Unit would be affected by river structure modification (dike, revetment and bank notching; and associated channels) and the change from agricultural lands to areas more conducive to fish and wildlife. Additionally, activities associated with developing side chutes, breeching Hodge Levee, and enhancing wetland areas would affect the topography of the site.

The purpose of the Mitigation Program is to restore Missouri River lands to a condition similar to that of the Missouri River floodplain prior to its channelization. Reconnecting the Missouri River to its floodplain by allowing migration of floodwaters across the site and allowing erosion of the river bank by scour action would result in dynamic changes in surface topography which would be considered a beneficial impact. The resulting shallow water habitat would resemble a more natural topography at the site, similar to that which occurred prior to the BSNP. Therefore, implementation of any of the build alternatives would provide beneficial impacts to topography. The No Development Alternative would have no affect on topography.

4.2.2 GEOLOGY

The development alternatives would include activities to erode and/or excavate the current riverbank area in order to create shallow water habitat. All activities would only affect alluvial deposits and not underlying bedrock or exposed bedrock outcroppings. Therefore, the alternatives would not affect geology. The No Development Alternative would have no affect on geology.

4.2.3 Soils

The intent of the Baltimore Bottom Chute Construction project is to induce erosion by the scour action of water flows, which would impact local soil conditions. This would be an unavoidable impact. Excavating soils for river structure modifications and construction of the side channel chutes could cause temporary increases in sediment loads and turbidity. Excavated material, less than 3 inches, would be disposed of by placing it directly into the river. Material disposed of into the river would be graded or placed in such a manner as to minimize adverse impacts. Excavated or in-place material would not impede the flow of water into or out of the river structure modifications or the inlet and outlet of the side channel chutes. Although the existing soils would eventually be scoured away along the bank of the river and within the side channel chute, the rivers constant flow would continue to deposit alluvial soils. The sediments deposited from flooding would positively affect vegetative growth by adding nutrients to the soils and increasing productivity.

Control measures would be implemented to ensure that undesirable pollutants from construction activities would not be discharged in storm water runoff. Disturbed areas not subjected to the rivers scouring action or construction of the side channel chutes would be seeded and stabilized after construction with appropriate mixtures of native seed.

Although short-term impacts would occur to the soils at the Baltimore Bottom Chute Construction Site as a result of the development alternatives, the long-term effect of these impacts would be beneficial by restoring and creating additional acres of fish and wildlife habitat through the development of shallow water habitat and wetlands. Additionally, the increased sediment load within the river would help stimulate the rivers historic conditions of continued erosion and deposition. The No Action Alternative is not anticipated to cause any adverse effects on soils.

4.3 PRIME AND UNIQUE FARMLAND

Soils designated as prime farmland are found within the area of the Baltimore Bottom Chutes Construction Site. Although the site provides some short-term agricultural leasing, it was originally purchased as part of The Big Muddy National Fish and Wildlife Refuge with the intent to restore the area to a more natural condition. Coordination with

the Missouri NRCS was conducted on September 12, 2006, using the Farmland Conversion Impact Rating Form AD-1006 to determine prime farmland values (Appendix A). The Missouri NRCS responded in a letter dated September 22, 2006, that "by the definitions contained in FPPA regulations, the proposed project does not convert the fundamental use of the land. Therefore, FPPA does not apply to this project." Thus, no prime farmland soils will be converted at this site.

4.4 BIOLOGICAL RESOURCES

Biological resources include the native or introduced plants and animals and the habitats in which they occur. Aquatic resources include fisheries, and terrestrial/wetland resources include vegetation communities and wildlife populations. Species that are proposed for, or listed as, threatened or endangered are included in both aquatic and terrestrial/wetland resources. An adverse impact would be significant if the viability of a biological resource of the area was jeopardized, with little likelihood of reestablishment to its original state or the action would result in the taking[1] of a listed threatened or endangered species. The significance of the impact would also be dependent upon the importance of the resource and its relative occurrence in the vicinity of the site. No adverse impacts are anticipated at the Baltimore Bottom Construction site.

4.4.1 AQUATIC RESOURCES

No significant adverse impacts to aquatic resources are anticipated. The fisheries resource associated with the Baltimore Bottom Construction Site could temporarily be disturbed during river structure modifications, and by activities associated with the construction of the side channel chute and shallow water habitat areas. Temporary increases in turbidity could impact water temperatures and dissolved oxygen content; however, any impact would be considered short-term, construction related, and insignificant.

Temporary impacts from incidental discharges into the Missouri River channel are possible, but would also be insignificant because of anticipated staging and timing of

[1] The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

river structure modifications and the construction of the side channel chutes. Incidental discharges of sediment from construction activities into the Missouri River could also provide a benefit. An increase in sediment load within the Missouri River would help simulate historic conditions of the river and would provide additional sediment for downstream deposition and improvement of shallow water habitat conditions. Increased turbidity lowers light transmission into the water. This could benefit species adapted to these conditions.

The intent of the development alternatives is to create and restore fisheries habitat. It is expected that approximately 128.7 acres of shallow water chute habitat and approximately 1,060 acres of wetland habitat will be available after the construction of the preferred alternative, depending on final bottom widths of the chutes and scouring action of the banks. The Long-term and cumulative beneficial impacts to aquatic habitat outweigh the temporary adverse impacts to the resources that would occur. The river structure modifications and resulting scouring of the Missouri River bank plus the creation of a three new side channel chutes would create shallow water habitat. Deep holes, shallow flats, and backwater habitats also would be expected to develop. These areas would provide habitat for fish species, macro-invertebrates, and plankton and provide a critical forage base needed for larval and juvenile fish. Populations of fish species, including the endangered pallid sturgeon, that have been declining in numbers, would benefit from shallow water habitat development. Creation of shallow water habitat would provide a beneficial effect to the Missouri River fishery. The No Development Alternative would not adversely affect aquatic resources.

4.4.2 Terrestrial/Wetland Resources

Alternative 1 would result in the conversion of approximately 12.5 acres of mature cottonwood, silver maple, sycamore, box elder, and willows trees located on accreted lands, approximately 48.4 acres of grasslands, and approximately 30.1 acres of agricultural land to approximately 128 acres of shallow, open-water areas at the Baltimore Bottom Chute Construction Site, after natural meander width is achieved. Alternative 2 would open up approximately 1,060 acres of levee protected land to the floodplain following the breeches in Hodge Levee. Additionally, 207 acres of farmland would be planted to native bottomland hardwood trees (See Appendix D). Alternative 3 combines Alternatives 1 and 2 so the changes in the terrestrial environment would be a

combination of those two alternatives. An additional minimal amount of terrestrial habitat may be temporarily disturbed due to river structure modifications and other activities associated with construction of the side channel chutes and levee breeches. As the side channel chute sites mature over time, additional bottomland forest and grassland habitats will re-colonize along the edges of the chutes and in the areas disturbed by construction. The diversity of habitats created and the number of species able to utilize the site after construction will provide an enormous benefit to the Baltimore Bottom site. No wetland areas will be adversely impacted by the proposed project. As such, the impacts to terrestrial resources related to the construction of the side channel chutes and the enhancement to the floodplain are considered beneficial in the long-term and any negative impacts resulting from construction are considered insignificant. The No Development Alternative would not have any direct impacts to the terrestrial or wetland habitat at the Baltimore Bottom Unit.

4.4.3 Wildlife

Impacts to wildlife inhabiting the Baltimore Bottom Chute Construction Site from the build alternatives would occur and are unavoidable. During construction, species would be temporarily displaced, but would likely return to the area after construction is completed. Species with limited mobility could be destroyed. Over the long-term, it is anticipated that wildlife would benefit from creation of more diverse and productive terrestrial and aquatic habitats so any impacts during construction would be considered insignificant. Side channel chute construction would provide habitat diversity for numerous waterfowl species, shorebirds, and fish. Terrestrial habitat would be enhanced and would be abundant for many bird and mammal species. Reptiles, and particularly amphibians, are expected to benefit greatly though the additional of wetland and aquatic habitat that would develop. Long-term and cumulative impacts to wildlife resources are expected to be beneficial from the increased abundance of newly developed habitat. The No Development Alternative would not adversely affect wildlife species.

4.4.4 Threatened and Endangered Species

The proposed project is located in a geographic area with potential presence of the Federally listed threatened bald eagle, endangered pallid sturgeon, and endangered

Indiana bat, and the state listed endangered American bittern and endangered flathead chub.

Bald Eagle The bald eagle may be affected by the proposed project since large trees that may be used for roosting will be cleared for chute construction. The Corps will conduct a survey immediately prior to construction to ensure that no eagles have established a nesting territory in the project area. This survey will help to ensure that adverse affects to the species are avoided, and will be coordinated with the USFWS. Human activity (i.e., construction) in the vicinity of wintering bald eagles is likely to affect eagles by causing disruptions to their normal behavior, removing potential roosting/perching trees, and by displacing eagles to non-preferred, marginal habitat. Should bald eagle nesting be located on site, the Corps will implement minimization measures (remaining 600 feet away from nests) during construction. Any disturbance to bald eagles would be temporary in nature and would cease when construction has been completed. Because large expanses of mature cottonwood trees can be found adjacent to the proposed project area, impacts to the normal behavior of the eagle would be considered insignificant. When completed, the project will provide increased aquatic habitat for foraging and roosting; thus, the proposed project will be a benefit the bald eagle.

Pallid Sturgeon Human activity (i.e., construction) in the Missouri River is likely to affect pallid sturgeons by causing disruptions to their normal behavior, interfering with feeding and sheltering during dredging operations, and displacing pallid sturgeons to non-preferred, marginal habitat. This impact is construction related and is considered temporary; thus, less than significant. The proposed project at the Baltimore Bottom Chute Construction Site would create approximately 113.7 acres of chute habitat and shallow water habitat. The proposed project is anticipated to result in beneficial affects to the pallid sturgeon through increases in spawning, rearing, nursery, feeding, and sheltering habitat.

Indiana Bat The Indiana bat may be affected by the proposed project if trees that may be used for roosting will be cleared during chute construction. However, the Corps conducted a "bat habitat" survey on September 27, 2006, to assess the project area for suitable bat habitat and to determine whether roost trees occur on site. No large diameter trees (14-16 inches dbh) with shedding or exfoliating bark were identified onsite

in the areas of chute construction. Some large dead cottonwood trees were noted along the Missouri River; however, these trees will not be disturbed by construction activities. Additionally, the Corps will clear trees in early winter when bats are hibernating in caves off-site, thereby, avoiding adverse affects to this species. Thus, no impacts to Indiana bat are anticipated.

American Bittern The American Bittern may be affected by the proposed project during construction through human related activities. These activities will cause disruptions to their normal feeding, breeding, and sheltering behavior. The affects will be short-term, construction related, and minor. The American bittern will benefit from the breeching of Hodge Levee, which will return approximately 1060 acres of farmed and grassland habitat to more frequent Missouri River flooding and extensive emergent wetland enhancement.

Flathead Chub Human activity (i.e., construction) in the Missouri River is likely to affect flathead chub by causing disruptions to their normal behavior, interfering with feeding and sheltering during dredging operations, and displacing flathead chub to non-preferred, marginal habitat. This impact is construction related and is considered temporary and less than significant. The proposed project at the Baltimore Bottom Chute Construction Site would create approximately 113.7 acres of chute habitat and, as of yet, an undetermined amount of shallow water habitat border habitat. The proposed project is anticipated to result in beneficial affects to the flathead chub through increases in spawning, rearing, nursery, feeding, and sheltering habitat.

The goal of the Missouri River Mitigation Program, of which the Baltimore Bottom Chute Construction Site is a component, is to restore fish and wildlife habitat along the lower Missouri River. In addition, all project features are designed to enhance, create, or restore terrestrial and aquatic habitat at the Baltimore Bottom Chute Construction Site. These activities would result in long-term benefits to the federally and state listed species identified above by increasing habitat for feeding, breeding, and sheltering. Although there will likely be some impacts to listed species during construction, these impacts are believed to be minor, insignificant, and not likely to adversely affect endangered and threatened species.

The No Development Alternative would not have the positive affects to bald eagle, pallid sturgeon, Indiana bat, American bittern, or the flathead chub because it would not

provide the additional feeding, breeding, and sheltering aspects that the proposed project provides.

4.5 LAND COVER

Approximately 12.5 acres of mature cottonwood, silver maple, sycamore, box elder, and willows trees and 32.6 acres of native grasslands will be cleared for the creation of the side channel chutes during construction of the Preferred Alternative. No significant adverse impacts to these vegetation cover types are anticipated because the proposed project seeks to plant approximately 207 acres of hardwood trees. The USFWS has agreed to plant native grassland species on approximately 300 acres following project completion.

Habitat restoration components of the build alternatives are expected to help recreate or mimic land and aquatic conditions present prior to the BSNP. Beneficial effects to the terrestrial land cover are expected over both the short and long-term as the project area matures. Successional forests that were once prominent on the site and along the Missouri River would once again become established. Increased levels of vegetation would likely result in a long-term beneficial impact on soil control. The No Development Alternative would not affect land cover and would not provide the long-term benefits of the preferred alternative in terms of species and habitat diversity.

4.6 CULTURAL RESOURCES

Federal agencies are required to determine the effect of their actions on cultural resources, which include historic and archeological resources under the *National Historic Preservation* Act (NHPA) [16 USC 470 *et* sec., as amended]. NHPA requires that certain steps be taken to ensure that cultural resources are located, identified, evaluated, and protected or impacts mitigated. Section 106 coordination has been initiated with the Missouri SHPO and affiliated Native American Tribes. The SHPO has concurred that adequate documentation has been provided (36 CFR Section 800.11), and that there will be "no historic properties affected" by the current project. Please see Appendix B for coordination with the SHPO office.

In the unlikely event that unanticipated archeological materials are discovered during construction, work in the area of discovery shall cease and the Kansas City District will

be notified. The Kansas City District Cultural Resource Manager would then notify the Missouri SHPO and appropriate federally recognized Native American Tribes.

4.6.1 Historic Properties and Archaeological Sites

No archeological sites or historic structures occur in the project area; therefore, none will be impacted.

4.6.2 Shipwrecks

No shipwrecks were recorded in the project area; therefore, none will be impacted.

4.7 WATER QUALITY

Physical disturbances during construction could have an adverse impact on water quality. Significant impacts would be those that would affect water quality in a manner that would exceed Federal and state standards, including degrading an existing use.

No significant adverse impacts are anticipated to the water quality of the Missouri River. Construction on site could temporarily increase sediment load and suspended solids in the Missouri River, and decrease water clarity and light penetration. These impacts would be unavoidable and are considered short-term and insignificant.

Methods to reduce discharges of pollutants in storm water runoff form the construction areas (e.g., Best Management Practices) would be implemented. Construction of the Baltimore Bottom Chute Construction Site would impact more than one acre, thus requiring a general permit for storm water discharge for land disturbances from the Missouri Department of Natural Resources (an NPDES permit). The general permit and associated storm water pollution prevention plan would address control issues for pollutants during and after construction. Construction activities would also comply with any conditions recommended by the Corps and Missouri Department of Natural Resources in issuing respectively the Section 404 authorization and 401 Water Quality Certification. Construction activities at the Baltimore Bottom Chute Construction Site would not exceed Federal or state water quality standards; therefore, no significant adverse impacts would result. The No Development Alternative would not affect water quality.

4.8 AIR QUALITY

Direct air quality impacts that would occur at the Baltimore Bottom Chute Construction Site would result from construction activities including excavation, grading, and construction-related traffic. An air quality impact would be considered significant if it results in a violation of NAAQS. No significant adverse impacts are expected to air quality at the site.

Increases in fugitive dust (suspended particulate matter) and increases in exhaust emissions from construction activities would be unavoidable; however, these impacts would be temporary and would be relatively low emission levels. These pollutants are expected to disperse quickly; therefore, any impact would be minimal. When necessary, construction access roads would be watered to minimize the escape of fugitive dust during high winds and periods of high construction-vehicle activity. The No Development alternative would not experience any construction related air quality effects.

4.9 NOISE

The noise impacts from the build alternatives at the Baltimore Bottom Chute Construction Site are related to the magnitude of the noise levels generated by construction activities and the proximity of sensitive noise receptors. A sensitive noise receptor is commonly defined as the occupants of a facility or location where a state of quietness is a basis for use. These locations include residences, hospitals, churches, and wilderness areas. Some species of protected wildlife are also considered to be sensitive noise receptors, for instance, the bald eagle.

The human response to noise is generally subjective (e.g., annoyance). Temporary increases in ambient noise levels at the Baltimore Bottom Chute Construction Site would be caused by construction activities. No adverse impacts to human sensitive receptors are anticipated because no such receptors are within close proximity of the site.

Noise impacts to wildlife vary depending on a species hearing ability, time of year, and physical condition. Species behavior, mating, and feeding activities may be impacted due to increases in noise levels, however, these are not considered significant. The No Development Alternative would have no noise affects.

4.10 SOCIOECONOMIC RESOURCES

Impacts to socioeconomic resources would be associated with construction activities and the operation of the Baltimore Bottom Chute Construction Site as a conservation area. Impacts would be significant if the proposed project would noticeably affect the local economy, labor market, or land use.

4.10.1 POPULATION AND INCOME

Impacts from construction and implementation of the development alternatives are not expected to have a significant impact on population and income of the local area. Population trends and composition in the local area are not anticipated to change. An influx of some construction dollars may provide for temporary increases to the local economy. Any possible increases to the local economy, though beneficial, would be insignificant. Long-term revenue in the local community could increase slightly from additional recreational opportunities. The No Development Alternative would have no population or income affects.

4.10.2 RECREATION AND AESTHETICS

No adverse impacts to recreation facilities or opportunities at the Baltimore Bottom Unit are expected. Temporary impacts to recreation opportunities could occur during construction if the Baltimore Bottom Chute Construction Site would be closed to the public for safety reasons. This could be considered inconvenient to some public users, though it would be insignificant. USFWS approved recreational activities for the public at the site include hunting, fishing, nature study, wildlife viewing, photography, and hiking. These recreational activities are expected to increase once the project is complete. Thus, long-term beneficial impacts are expected.

Visual impacts would be temporary and would occur during construction of the recommended alternative. No significant adverse impacts to aesthetics and the surrounding landscape are expected. Over the long-term, the visual aesthetic values of the area should improve as a result of the increased habitat and a greater diversity of features on the site and its transformation to a more natural condition. The No Development Alternative would have no recreation or aesthetic affects.

4.10.3 NAVIGATION

No adverse impacts to navigation are expected from construction and operation of the Baltimore Bottom Chute Construction Site for any of the alternatives. The U.S. Congress requires the Corps to maintain a 9-foot deep by 300-foot wide navigation channel. The Corps intends that the navigation channel would not be adversely affected by the alternatives. Activities associated with construction of the side chute channel are not expected to adversely impact navigation.

4.11 CUMULATIVE EFFECTS

Cumulative effects of the Mitigation Program were addressed in the SEIS (2003). The SEIS evaluated cumulative effects on the following topics:

- *Land acquisition*
- *Economic impacts*
- *Recreation*
- *Navigation*
- *Water Resources (including water quality)*
- *Flood Control*

Cumulative effects associated with these resource categories do not need to be evaluated in the PIR because there are no extraordinary site-specific circumstances that necessitate an additional cumulative impacts analysis. However, there are other cumulative effects not addressed in the SEIS that would result from the construction and operation of the Baltimore Bottom Chute Construction Site. These include the following:

- Regional increases in fish and wildlife populations resulting from site-specific habitat development activities on the land use. Increases in regional habitat quality should positively correlate to increases in fish and wildlife resources in terms of species diversity and abundance.
- Continued regional benefits from increased floodwater retention capacity on the Missouri River floodplain would provide incremental flood protection for residences and properties downstream.

- Overall beneficial increases in terrestrial and aquatic habitat that support the bald eagle, pallid sturgeon, Indiana bat, American bittern, and flathead chub that would benefit feeding, breeding, and sheltering.
- Regional beneficial improvements in water quality from the filtering affects of wetland habitats on the Baltimore Bottom Chute Construction.
- Regional increases in public land availability for recreational opportunities.

4.12 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments due to construction and operation of the Baltimore Bottom Chute Construction Site include the loss of some Federal funds, labor, energy, and construction materials used to plan, design, construct, and monitor the project.

4.13 FUTURE WITHOUT-PROJECT CONDITION

Without construction and operation of the Baltimore Bottom Chute Construction Site, activities to develop fish and wildlife habitat would not be undertaken. The USFWS currently holds fee title to the Baltimore Bottom Unit and is currently managing the land. Without future development activities, terrestrial habitats would continue to recolonize naturally over many years, and no additional shallow water habitat would be created. Natural succession would occur. The habitat that would develop at the Site over the long-term would be solely dependent on the processes of natural succession acting on the area. No additional recreational features would be constructed, but the site would be open to the public for recreational uses such as bird watching, hiking, fishing, and hunting.

4.14 ENVIRONMENTAL COMPLIANCE

This section summarizes the statutory and regulatory environmental compliance requirements and discusses the major Federal and state permits and clearances that would be required for the approval and implementation process for the Baltimore Bottom Chute Construction Site. The applicability and status of these environmental requirements is presented below in Table 4-1 and a discussion of the most important requirements follows the table.

Table 4-1: Compliance of Preferred Alternative with Environmental Protection Statutes and Other Environmental Requirements

Federal Environmental Requirements	Applicability	Status a,b,c,d
Archeological Resources Protection Act, 16 U.S.C. 470, et. seq.	Applicable	Full Compliance
Clean Air Act, as amended, 42 U.S.C. 7401-7671g, et. seq.	Applicable	Full Compliance
Clean Water Act (Federal Water Pollution Control Act),	Applicable	Full Compliance
Coastal Zone Management Act, 16 U.S.C. 1451, et. seq.	Not Applicable	Not Applicable
Endangered Species Act, 16 U.S.C. 1531, et. seq.	Applicable	Full Compliance
Estuary Protection Act, 16 U.S.C. 1221, et. seq.	Not Applicable	Not Applicable
Federal Water Project Recreation Act, 16 U.S.C. 4601-12, et. seq.	Applicable	Full Compliance
Fish and Wildlife Coordination Act, 16 U.S.C. 661, et. seq.	Applicable	Full Compliance
Land and Water Conservation Fund Act, 16 U.S.C. 4601-4, et. seq.	Not Applicable	Not Applicable
Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et. seq.	Not Applicable	Not Applicable
National Environmental Policy Act, 42 U.S.C. 4321, et. seq.	Applicable	Full Compliance
National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470a, et. seq.	Applicable	Full Compliance
Rivers and Harbors Act, 33 U.S.C. 403, et. seq.	Applicable	Full Compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et. seq.	Applicable	Full Compliance
Wild and Scenic River Act, 16 U.S.C. 1271, et. seq.	Not Applicable	Not Applicable
Farmland Protection Policy Act, 7 U.S.C. 4201, et. seq.	Applicable	Full Compliance
Protection & Enhancement of the Cultural Environment (Executive Order 11593)	Applicable	Full Compliance
Floodplain Management (Executive Order 11988)	Applicable	Full Compliance
Protection of Wetlands (Executive Order 11990)	Applicable	Full Compliance
Environmental Justice (Executive Order 12898)	Applicable	Full Compliance

a. Full Compliance. Having met all requirements of the statute for the current stage of planning (either pre-authorization or post-authorization)
b. Noncompliance. Violation of a requirement of the statute.
c. Not applicable. No requirements for the statute required; compliance for the current stage of planning.

4.14.1 Environmental Policy

The Corps is preparing this PIR for the Baltimore Bottom Chute Construction Site. The PIR documents the planning for the mitigation site and will provide the information needed to ensure compliance with respect to environmental considerations.

Federal agencies use the *National Environmental Policy Act* (NEPA) [42 USC 4321 et seq.] to evaluate the environmental impacts of a proposed project. Through the NEPA process, public officials and citizens are given opportunity to be involved in the environmental review and receive information about environmental impacts before any decisions are made on Federal actions regarding the proposed projects. This PIR is intended to serve as the documentation necessary to incorporate the NEPA process into the Missouri River mitigation planning and implementation. If no significant impacts are determined, a Finding of No Significant Impact (FONSI) would be prepared and NEPA compliance would be fulfilled.

4.14.2 Water Resources

Section 404 – Discharge of Dredged or Fill Material into waters of the United States. Department of the Army authorization pursuant to Section 404 of the Clean Water Act is required for the construction of the side channel and the discharge of material into the Missouri River. The side channel construction and the modification of the existing dikes and revetments and the associated bank excavation for the creation, restoration and enhancement of SWH in the Missouri River is authorized under Nationwide Permit (NWP) #27 for Stream and Wetland Restoration Activities. The text of the 2002 NWP #27 and the General Conditions are attached in Appendix C. Since the construction of the side channel and modification of the existing structures and bank excavation is authorized by a general permit (NWP #27) subject to the Section 404(b)(1) Guidelines, an individual evaluation of the guidelines is not required. By initialing on the cover memo, OD-R concurs that the proposed project is in compliance with Section 404 of the Clean Water Act and the decision and procedures utilized are consistent with the requirements of the Regulatory Program.

Section 401 – Water Quality Certification. State water quality certification was approved for the 2002 NWP #27 by both the Missouri Department of Natural Resources (MDNR) and the Corps of Engineers, as described in the Public Notice dated September 28,

2005. The Public Notice and the blanket Water Quality Certification Conditions for the NWP #27 are attached in Appendix C.

Section 402 – National Pollution Discharge Elimination System (NPDES) Storm Water Discharge Permit. The MDNR Permit and Engineering Section, in a letter dated 5 May 2006, provided an NPDES State General Operating Permit for these types of projects, No. MO-G699000, with an effective date of 19 August 2005 and an expiration date of 18 August 2010 (Appendix A). The Corps of Engineers agrees that NPDES BMP requirements are to be taken during construction of this mitigation project. As such, the Corps will again be coordinating with the MDNR to obtain a site-specific NPDES Permit for this project.

4.14.3 Biological Resources

Federal agencies are required to determine the effects of their actions on Federally listed endangered or threatened species and their critical habitats under the *Endangered Species Act* (ESA) [16 USC 1531 et seq.]. Steps must be taken by the Federal agency to conserve and protect these species and their habitat, and to avoid or mitigate any potentially adverse impacts resulting from the implementation of the proposed project.

The *Fish and Wildlife Coordination Act* (16 U.S.C. 661, et seq.) provides the basic authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires that when the Corps constructs, licenses or permits water resource development projects that they first consult with USFWS (and the National Marine Fisheries Service in some instances) and state fish and wildlife agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Full consideration is to be given to USFWS recommendations and recommendations have been agreed to in the Missouri River Fish and Wildlife Mitigation Project Environmental Impact Statement dated March 2003. Coordination under this Act was provided during the public comment period under Public Notices No. 200602731. The USFWS in an email dated October 16, 2006, stated that the activity "is not likely to adversely affect federally listed species or designated critical habitat, and consequently, concluded section 7 consultation under the ESA. The MDNR responded in an email dated November 9, 2006, and provided a list of

recommendations to aid in the protection of water quality. These recommendations will be included in the final design of the project. Copies of the Agency's and public responses can be found in Appendix A.

4.14.4 Cultural Resources

Federal agencies are required to determine the effect of their actions on cultural resources, which include historic and archaeological resources under the *National Historic Preservation Act* (NHPA) [16 USC 470 et seq., as amended]. NHPA requires that certain steps be taken to ensure that cultural resources are located, identified, evaluated, and protected or impacts mitigated. Section 106 coordination has been initiated with the Missouri SHPO and affiliated Native American Tribes. The SHPO has stated that "adequate documentation has been provided (36 CFR Section 800.11)", that there will be "no historic properties affected" and has concurred that no further work is required for the project (Appendix B).

In the unlikely event that unanticipated archeological materials are discovered during construction, work in the area of discovery shall cease and the Kansas City District will be notified. The Kansas City District Cultural Resources Manager would then notify the Missouri SHPO and appropriate federally recognized Native American tribes.

4.14.5 Air Quality

The Federal policy to protect and enhance the quality of the air to protect human health and the environment is established under the *Clean Air Act* [42 USC 7401 et seq., as amended]. Impacts to air quality are considered to be insignificant. Therefore, no additional actions would be required for full compliance.

Chapter 5

Other Considerations

5.1 INTRODUCTION

The recommended alternative for the Baltimore Bottom Chute Construction Site includes various activities, previously described, to develop fish and wildlife habitat. This section describes the monitoring and evaluation plan, operations and maintenance plan, real estate considerations, implementation responsibilities, views, cost estimates, schedules, and conclusions and recommendations for the Baltimore Bottom Chute Construction Site recommended alternative.

5.2 MONITORING AND EVALUATION (M&E) PLAN

The purpose of the site M&E plan is to establish goals for monitoring and evaluating and to guide the pre- and post-construction collection of physical and biological information. This information would be used to evaluate any changes or improvements to the Baltimore Bottom Chute Construction Site and as a tool to measure the success of the proposed project in helping to achieve the goals of the overall Mitigation Program. Information obtained could also be used to compare the Baltimore Bottom Chute Construction Site to the success of past and future mitigation sites.

The M&E Committee by the ACT was established to develop an M&E plan for the Mitigation Program. This committee included representatives from the Corps, USFWS, IDNR, KDWP, MDC, and NGPC. A draft of the M&E Plan has been completed.

The goal of the M&E plan is to understand the physical and biological responses to Mitigation Program actions within an adaptive management context. The objectives of the M&E plan include the following:

- Track location, type, and physical characteristics of each mitigation site;
- Quantify habitat use and population responses of key species;
- Recommend program adaptations based on new information;
- Gain an understanding of the physical and biological responses through time; and
- Formalize information transfer among all to communicate lessons-learned and increase the effectiveness of project actions.

Because of this program's significant financial investment, it is important to learn how constructed mitigation sites are performing and apply adaptive management, as needed, on existing and future sites to maximize habitat potential. This information will help determine the program's level of success and provide a basis for future adaptive management. By monitoring the mitigation sites and collecting basic habitat data, the ACT can determine whether the mitigation sites are performing as expected. Utilizing information obtained through the monitoring of sites will enable decision makers to recommend improvements to existing sites and make more informed decisions about planning and design of future sites. The M&E committee has agreed to a three-tiered M&E program. Tier 1 will gather data on the physical aspects of the mitigation sites, Tier 2 will document the project's biologic response, and Tier 3 activities will include focused research to test a specific hypothesis.

Tier 1 data is limited to physical data on mitigation sites. The physical data will include habitat delineations, cross sections, hydrographs, etc. Habitats will be classified using the National Wetland Inventory (NWI) and the National Land Cover Data (NLCD) classification system. Aquatic and wetland habitats will be classified using the NWI and all uplands habitats will be classified using the NLCD system. The Mitigation Program will document the existing baseline habitat conditions for each mitigation site to establish the baseline habitats that existed prior to acquisition. This data will be established and maintained by the Corps as a GIS land cover data layer. The Corps or its contractors

will perform tier 1 efforts. In general, the baseline condition of new sites will be documented during site-specific design activities and NEPA compliance.

Tier 2 activities utilize standardized protocol, as approved by the M&E committee, to monitor the biologic response at select mitigation sites. The committee has established native riverine fish species as being the highest priority for monitoring followed by birds, reptiles, and amphibians. This monitoring may also track changes in both quality and quantity of a species' preferred habitat. Tier 2 activities may characterize the habitat in greater detail using the NWI and NLCD systems, as appropriate. This additional data on habitat will be added to the GIS land cover data layer maintained by the Corps. These monitoring activities will be completed by the mitigation site's land managing agency and funded through the site's annual management plan. It is not yet clear if Tier 2 monitoring will be conducted at the Baltimore Bottom Chute Construction site as sites for this monitoring have already been chosen. If resources allow, additional sites may be added.

Specific research activities will be Tier 3 activities and will test a specific hypothesis relevant to the Mitigation Program. These activities may include more rigorous research techniques and sampling protocol. As with Tier 2 monitoring, these research projects will be completed by the mitigation site's land managing agency and funded through the site's annual management plan. For Tier 3 research, the land managing agency will also decide how to conduct these activities (i.e., in-house labor, contract, academic institution, etc.). Research results will be reported in annual progress reports and final reports. The M&E committee will meet annually to review all on-going monitoring activities and decide on future activities based on available appropriations. Tier 3 research will receive lower priority for funding than Tier 1 or Tier 2 monitoring activities.

Monitoring efforts may reveal the need for adaptive management at the Baltimore Bottom Chute Construction Site. As an example, adaptive management efforts might become necessary on the site if drought conditions persist or flooding results in damage to project features or vegetative plantings. Additionally, the biotic response of the habitat development measures, results of the M&E plan, changing site conditions and opportunities to focus on achieving the maximum restoration benefits possible at each site may also require changes to the site through adaptive management. If any re-work were needed to restore the area, the Corps would pay for it with Construction General

funds. If the re-work were considered a major change to the recommended alternative identified in this PIR, a supplemental to this PIR would be required.

The M&E committee established two subcommittees to develop the program's mitigation efforts. These protocols are "living" documents that may be modified to better facilitate future-monitoring activities, as needed (i.e., improved sampling methods, additional informational needs, etc.). A team of biologists, representative of the four state fish and game agencies and Federal agencies affiliated with various Missouri River projects, including pallid sturgeon projects, provided the framework for these plans and protocols. These biologists provided knowledge and experience regarding the fish and bird communities of the Missouri River ecosystem, including the pallid sturgeon. The fish monitoring protocol includes standard operating procedures for fishery sampling gears, sampling segments, sampling strategies, sampling experimental design, and collection of micro-habitat characteristic data.

Standardized protocols for monitoring of fish and avian response are included as an appendix to the M&E Plan that has been prepared by the M&E Committee. The M&E Plan also includes guidance on schedule, funding, quality control, acquisition strategy, and communications regarding M&E activities for the Mitigation Program. The M&E Plan and appendices will be made available on the Mitigation Program website (http://www.nwk.usace.army.mil/projects/mitigation).

5.3 OPERATIONS AND MAINTENANCE (O&M) PLAN

The USFWS would continue to operate and maintain the Baltimore Bottom Unit as part of The Big Muddy National Fish and Wildlife Refuge. The Corps would operate and maintain the Baltimore Bottom Chute Sites. O&M activities at the Baltimore Bottom Chute Construction Site would include a continuation of basic land management practices as well as continued wetland habitat development, vegetative plantings of native grasses and trees, weed control, and signage. The Corps will prepare an O&M Manual for the Baltimore Bottom Chute Construction Site.

5.4 REAL ESTATE CONSIDERATIONS

The Baltimore Bottom Unit is approximately 1,626 acres and is owned by the USFWS. The USFWS purchased the land from willing private sellers on October 8, 2002 and in

2005. The USFWS currently manages all lands on the site as part of The Big Muddy National Fish and Wildlife Refuge and would continue to do so upon completion of the project. Management of the chutes and shallow water areas would fall under the responsibility of the Corps.

5.5 IMPLEMENTATION RESPONSIBILITIES

The Corps is responsible for study management and coordination with the USFWS and other affected/interested agencies. The Corps will prepare and submit the subject PIR and complete all environmental review and coordination requirements. The Corps will then prepare any design plans that may be required, finalize any plans and specifications, prepare and implement a monitoring and evaluation plan, advertise and award a construction contract, perform construction contract supervision and administration, develop an O&M manual, ensure O&M is carried out in accordance with the O&M manual, and develop and implement the real estate agreement and O&M agreement. In the event of flood damages to the project, the Corps will evaluate and complete the work necessary to reestablish project features. The Corps is responsible for management of the project features at the Baltimore Bottom Chute Construction Site and for any other activities outlined as Corps responsibility in any O&M agreements.

5.6 COST ESTIMATE

The total estimated cost of the Baltimore Bottom Chute Construction Site includes: design, construction, and construction management. See Table 5-1 below for the Baltimore Bottom Chute Construction Site cost estimate.

Table 5-1 - Cost Estimate

Activity	Cost ($)
Design	220,000
Construction	5,480,000
Construction Management	180,000
Total	**5,880,000**

Source: Corps, Baltimore Bottom Chute Construction Habitat Restoration Plan, November 2006

The Baltimore Bottom Chute Construction Site project would be Federally funded in its entirety. If Federal funds are not available to accomplish general operations, management and maintenance at the site, then such work would likely be deferred or not accomplished. The cost estimate would be updated throughout the life of the project as project features are further defined.

5.7 SCHEDULE

Table 5-2. Baltimore Bottom Chute Construction Site Project Schedule

Milestone	Scheduled	Actual
Cooperative Agreement Signed	TBD	TBD
PIR Started	August 2006	August 2006
PIR Approved	February 2006	November 2006
Plans Started	October 2006	February 2006
Plans Reviewed	November 2006	TBD
Plans Approved	January 2006	TBD
Construction Started	November 2006	TBD
Construction Completed	July 2007	TBD

5.8 CONCLUSIONS AND RECOMMENDATIONS

Habitat development at the Baltimore Bottom Chute Construction Site has been identified as a priority project for inclusion into the Mitigation Program. The USFWS and ACT concur. The value of the area as wildlife habitat prior to acquisition was minimal due to the majority of the area being in agricultural use. Development at the Baltimore Bottom Chute Construction Site would restore wetland, prairie, bottomland forest, and

create shallow water habitat through construction of side channel chutes. These activities would greatly enhance the site's value as fish and wildlife habitat.

It is recommended that the Preferred Alternative be constructed as described in this PIR. The Preferred Alternative would result in the greatest beneficial benefits to fish and wildlife habitat and would not significantly adversely affect the human environment.

References

Berner, L. M. 1951. *Limnology of the lower Missouri River.* Ecology 32:1-12.

National Research Council (NRC). 2002. *The Missouri River ecosystem: exploring the prospects of recovery.* National Academy Press, Washington, D.C.

Richards, Joseph M. 1999. Water-Quality and Ground-Water Hydrology of the Columbia/Eagle Bluffs Wetland Complex, Columbia, Missouri – 1992-99.

U.S. Army Corps of Engineers (Corps). 2004. *Missouri River Fish and Wildlife Mitigation Program, Program Management Plan.* Kansas City District.

---------2003. *Missouri River Fish and Wildlife Mitigation Project, Final Supplemental Environmental Impact Statement.* Kansas City and Omaha Districts.

------- 2001. *Main Report Revised Draft Environmental Impact Statement. Volume 1: Missouri River Master Water Control Manual Review and Update Study.* Northwestern Division, Omaha, Nebraska.

------- 1995. *Floodplain Management Assessment of the Upper Mississippi River, Lower Missouri River, and major tributaries. Appendix C: Environmental Resource Inventory.* St. Paul District, St. Paul, Minnesota.

------- 1994. *Missouri River Master Water Control Manual Review and Update, Volume 3A: Low Flow Studies, Gavins Point Dam to St. Louis, Missouri.* Missouri River Division.

------- 1990. *Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project, Real Estate Design Memorandum No. 1.* Missouri River Division.

------- 1990. *Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project Reaffirmation Report.* Missouri River Division, Omaha, Nebraska.

------- 1981. *Missouri River Fish and Wildlife Mitigation Iowa, Nebraska, Kansas, and Missouri Final Feasibility Report and Final Environmental Impact Statement.* Missouri River Division, Omaha District, Omaha, Nebraska.

Appendix A

Public and Agency Coordination

Vandenberg, Matthew D NWK

From: Don Boos [don.boos@dnr.mo.gov]
Sent: Thursday, November 09, 2006 9:28 AM
To: Vandenberg, Matthew D NWK
Cc: Hansen, Rick MVS External Stakeholder; stuart.miller@mdc.mo.gov; Carl Stevens; Shannon Slater
Subject: RE: Army Corps of Engineers, Kansas City District, PN06-02731/CEK003545

The Missouri Department of Natural Resources' Water Protection Program has reviewed Public Notice No. PN06-02731/CEK003545 in which the Army Corps of Engineers (Corps) proposes to restore fisheries and wildlife habitat at the Big Muddy National Fish and Wildlife Refuge, at a site known as the Baltimore Bottoms Unit. Aerial maps of the Baltimore Bottoms Unit area indicate that there was a historic chute traversing the area. Placement of revetments and closure dikes during the construction of the Missouri River Bank Stabilization and Navigation Project (BSNP) greatly reduced flows through the chute and resulted in aquatic habitat degradation. At present, this historic chute is not connected to the river. This project proposes to construct, create and enhance fish and wildlife habitat and add to the development of Shallow Water Habitat (SWH) in the Missouri River. The chute restoration, wetland, and shallow water habitat development at the Big Muddy National Fish and Wildlife Refuge, Baltimore Bottoms Unit, includes the construction of three flow-through side chutes of varying lengths and widths (the chutes will be designed to erode naturally over time). The three chutes will be approximately 12,665; 4,190 and 4,850 lineal feet in length. The chutes will be constructed with steep side slopes and the average depth of excavation will be 20 feet. The invert of the chutes will be constructed at –6 (large chute) and -5 (small chutes) Construction Reference Plane (CRP), to create immediate shallow water habitat in the chutes, allow the chutes to evolve over time, and minimize the bedload entering the chutes from the main channel. A total of approximately 15,000 tons of rock will be placed for the three grade-control structures. Rock placed on the control structures will be consistent with quarry-run rock used for construction and operation and maintenance of the BSNP; i.e., stone fill dikes and revetments. Existing stone and/or pile dikes and revetments along the chute alignments will be notched a minimum of 75-ft to allow future widening of the chutes through erosion. It is estimated that approximately 1,427,000 yd^3 of material will be excavated for the chutes. The excavated spoil material will be disposed of directly in the Missouri River (less than three-inches in diameter or side cast adjacent to the chutes (greater than three-inches in diameter). Cleared trees will be placed along the high bank adjacent to the chute alignments and will be allowed to fall into the eroding chutes to increase aquatic habitat diversity. The cleared trees consist primarily of cottonwoods and silver maples. Chute construction will create approximately 66.2 acres of shallow water habitat immediately after construction, and at least 113.7 acres after the chute erodes to the design width. Additionally, a small non-federal levee will be breeched in strategic locations to create and enhance approximately 1,060 acres of wetland habitat, and a total of approximately 533 acres of farmland will be converted to bottomland hardwood trees and native grasslands. The purpose of the project is to create shallow water habitat by increasing the aquatic habitat with a side channel chute, create and enhance wetland habitat through breeches in Hodge Levee, and return and portion of the site to habitat conducive to resident and migratory species. A preliminary determination has been made that the proposed work would be authorized by Nationwide Permit No. 27, Stream and Wetland Restoration Activities.

A preliminary jurisdictional determination indicated that no wetlands will be impacted from the construction of the three side channel chutes. The completed project will create and enhance up to 1,060 acres of wetlands through the breeching of Hodge Levee and the construction of a stop-log structure near the southeast corner of the site.

The proposed project is located in and along the right over bank of the Missouri River, between river miles 297.0 and 300.1. The Baltimore Bottoms Unit occupies approximately 1,500 acres of land on the western floodplain. This land is owned and managed by the U.S. Fish and Wildlife Service as part of the Big Muddy National Fish and Wildlife Refuge. The site is located two miles west of Waverly, Missouri, in Sections 15, 16 and 17, Township 51 north, Ranges 24 and 25 west in Lafayette County, Missouri.

We offer the following comments:

1. The riparian area, banks, etc., should be restored to a stable condition to protect water quality as soon as possible. Seeding/planting of native vegetation, mulching and needed fertilization should be within three days of final contouring, or as soon as possible as seasonal timing permits. On-site inspections of these areas should be conducted by the permittee as necessary to ensure successful revegetation and stabilization, and to ensure that erosion and deposition of soil in waters of the state are not occurring from this project.

2. Clearing of vegetation/trees should be the minimum necessary to accomplish the activity.

3. Care should be taken to keep machinery out of the waterway as much as possible. Fuel, oil and other petroleum products, equipment and any solid waste should not be stored below the ordinary high water mark at any time or in the adjacent floodway beyond normal working hours. All precautions should be taken to avoid the release of wastes or fuel to streams and other adjacent waterbodies as a result of this operation.

4. Only clean nonpolluting fill should be used.

5. Work should be conducted during low flow whenever possible.

6. The following materials are not suitable for bank stabilization and should not be used due to their potential to cause violation of the general criteria of the Water Quality Standards, 10 CSR 20-7.031 (3) (A) –(H):

a. Earthen fill, gravel, broken concrete where the majority of material is less than 12 inches in diameter, and fragmented asphalt, since these materials are usually not substantial enough to withstand erosive flows;

b. Concrete with exposed flows;

c. Tires, vehicles or vehicles bodies, construction or demolition debris are solid waste and are excluded from placement in the waters of the state; and

d. Liquid concrete, including grouted riprap, if not placed as part of an engineered structure.

Recycled concrete may be used provided that it is clean material broken into appropriately sized pieces (greater than 12 inches) ofr riprap with no protruding rebar.

7. The public notice states that a preliminary determination has been made that the proposed work would be authorized by Nationwide Permit No. 27, Stream and Wetland Restoration Activities; as long as all conditions are met, we have no objections to this proposal.

Thank you for the opportunity to comment on this proposed project. If you have any questions, please contact Shannon Bruns of the NPDES Permits and Engineering Section at (573) 526-1535.

SB:pc

CULTURAL RESOURCE ASSESSMENT
Section 106 Review

CONTACT PERSON/ADDRESS

Matthew Vandenberg
Corps of Engineers, Kansas City District
Environmental Resources Section, Room 843
601 East 12th Street
Kansas City, Missouri 64106

C:

Joe Cothern, EPA
Tim Meade, COE/KC

PROJECT:

Kansas City District Application No. 200602731

FEDERAL AGENCY

COE

COUNTY:

LAFAYETTE

The State Historic Preservation Office has reviewed the information submitted on the above referenced project. Based on this review, we have made the following determination:

☐ After review of initial submission, the project area has a low potential for the occurrence of cultural resources. A cultural resource survey, therefore, is not warranted.

☒ Adequate documentation has been provided (36 CFR Section 800.11). There will be "no historic properties affected" by the current project.

☐ An adequate cultural resource survey of the project area has been previously conducted. It has been determined that for the proposed undertaking there will be "no historic properties affected".

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK ARE CHANGED, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: _____ **October 31, 2006**
Mark A. Miles, Deputy State Historic Preservation Officer **Date**

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102
For additional information, please contact Judith Deel, (573) 751-7862. Please be sure to refer to the project number: 001-LF-07

Sac and Fox Nation of Missouri in Kansas and Nebraska

305 North Main Street • Reserve, Kansas 66434
Phone (785) 742-7471 • Fax (785) 742-3785

October 26, 2006

Matthew Vandenberg
U.S. Army Corps of Engineers
Environmental Resources Section
601 East 12th Street
Room 843
Kansas City Missouri 64106

Dear Mr. Vandenberg

Thank you for your letter, which is in compliance with Section 106 of the National Historic Preservation Act, and Section 110.

The Sac and Fox Nation of Missouri in Kansas and Nebraska do not have an interest in this site:

200602731

There are two other bands of Sac and Fox that also need to be contacted, the Sac and Fox Nation of Oklahoma and the Sac and Fox of the Mississippi in Iowa.

Johnathan Buffalo, Sac and Fox of the Mississippi in Iowa
349 Meskwaki Rd.
Tama, IA 52339-9629

Sandra Massey, Sac and Fox Nation of Oklahoma
Rt. 2, Box 246
Stroud, OK 74079

If you have any questions, please contact me at the number or address above.

Sincerely,

Deanne Bahr
Sac and Fox Nation of Missouri in Kansas and Nebraska
NAGPRA Contact Representative

OMAHA TRIBE OF NEBRASKA

P. O. Box 368
Macy, Nebraska 68039

EXECUTIVE OFFICER
Eleanor Baxter, Chairperson
Orville Cayou, Vice-Chairman
Crystal Appleton, Treasurer
Rodney Morris, Secretary

TRIBAL ADMINISTRATION

(402) 837-5391
FAX (402) 837-5308

MEMBERS
Mitch Parker
Bert Walker
Barry D. Webster

November 8, 2006

US Army Corps of Engineers
Environmental Resources Section
601 East 12th Street, Room 843
Kansas City, MO 64106

RE: Permit #200602731

Dear Mr. Vandenberg:

I am writing this letter in regards to the comment letter received by the Omaha Tribe in regards to a response for comment according to the National Historic Preservation Act.

It is our intention to state yes, it is our historical lands. However, if there has been previous disturbance of soil then no response should be required. Also, that if there should or happen to be an inadvertent discovery, your process should immediately be to contact me at the address of this letter.

The contact person will be myself and if you have any other questions, please do not hesitate to contact us at your convenience. I can be reached at (402) 846-5166.

Thank you for your time and attention.

Tony Provost – Historical Preservation Officer

October 23, 2006

Mathew Vandenberg
US Army Corps of Engineers
Environmental Resources Section
601 East 12th Street
Room 843
Kansas City, Missouri 64106

RE: Permit No. 200602731

Dear Mr. Mathew Vandenberg,

Thank you for your recent letter. The Cultural Preservation Officer would like to inform you that the Winnebago Tribe of Nebraska has no cultural properties in the area of your proposed construction. According to oral tradition, the Winnebago Tribe has never lived in this area. However if there are any burial sites or other cultural properties found, please notify the appropriate office right away. Thank you.

Sincerely,

Emily Smith-DeLeon
Repatriation Assistant
402-878-3313

PUBLIC NOTICE

US Army Corps
of Engineers
Kansas City District

REC'D OCT 13 2006

Permit No. 200602731
Issue Date: October 11, 2006
Expiration Date: November 10, 2006

30-Day Notice

JOINT PUBLIC NOTICE: This public notice is issued jointly with the Missouri Department of Natural Resources, Water Pollution Control Program. The Department of Natural Resources will use the comments to this notice in deciding whether to grant Section 401 Water Quality Certification. Those commenting are requested to furnish a copy of their comments to the Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102.

APPLICANT: Kansas City District, Corps of Engineers
700 Federal Building
Kansas City, Missouri 64106-2896

PROJECT LOCATION (As shown on the attached drawings): The proposed project is located in and along the right over bank of the Missouri River, between river miles (RM) 297.0 and 300.1. The Baltimore Bottoms Unit occupies approximately 1,500 acres of land on the western floodplain. This land is owned and managed by the U.S. Fish and Wildlife Service as part of the Big Muddy National Fish and Wildlife Refuge. The site is located two miles west of Waverly, Missouri in Sections 15, 16, and 17, Township 51 North, Range 24 and 25 West, in Lafayette County, Missouri.

AUTHORITY: The Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project as authorized in the Water Resources Development Acts of 1986 and 1999 (Public Law 99-662) and Section 404 of the Clean Water Act (33 USC 1344).

ACTIVITY (As shown on the attached drawings): **PROPOSED WORK:** The U.S. Army Corps of Engineers (USACE) proposes to restore fisheries and wildlife habitat at the Big Muddy National Fish and Wildlife Refuge, at a site known as the Baltimore Bottoms Unit. Aerial maps of the Baltimore Bottoms Unit area indicate that there was a historic chute traversing the area. Placement of revetments and closure dikes during the construction of the Missouri River Bank Stabilization and Navigation Project (BSNP) greatly reduced flows through the chute and resulted in aquatic habitat degradation. At present, this historic chute is not connected to the river. This project proposes to construct, create, and enhance fish and wildlife habitat and add to the development of Shallow Water Habitat (SWH) in the Missouri River. The chute restoration,

PROPERTY ADJACENT TO PROJECT AREA: Property adjacent to the project site is owned by the USFWS and the MDC. Property owners adjacent to the proposed project area will be notified directly to inform them of the project and to request their comments.

CULTURAL RESOURCES: The proposed project has been reviewed in compliance with the National Historic Preservation Act of 1966 (Public Law 89-665). Background research that consisted of a review of the National Register of Historic Places (NRHP), a site records search, and a review of historic channel and shipwreck maps was conducted for the project. No historic properties listed in the NRHP were identified in the project area. A search of records with the Missouri State Historic Preservation Officer (SHPO) identified no previously recorded archeological sites or historic structures in the immediate area. No shipwrecks were found in the proposed area.

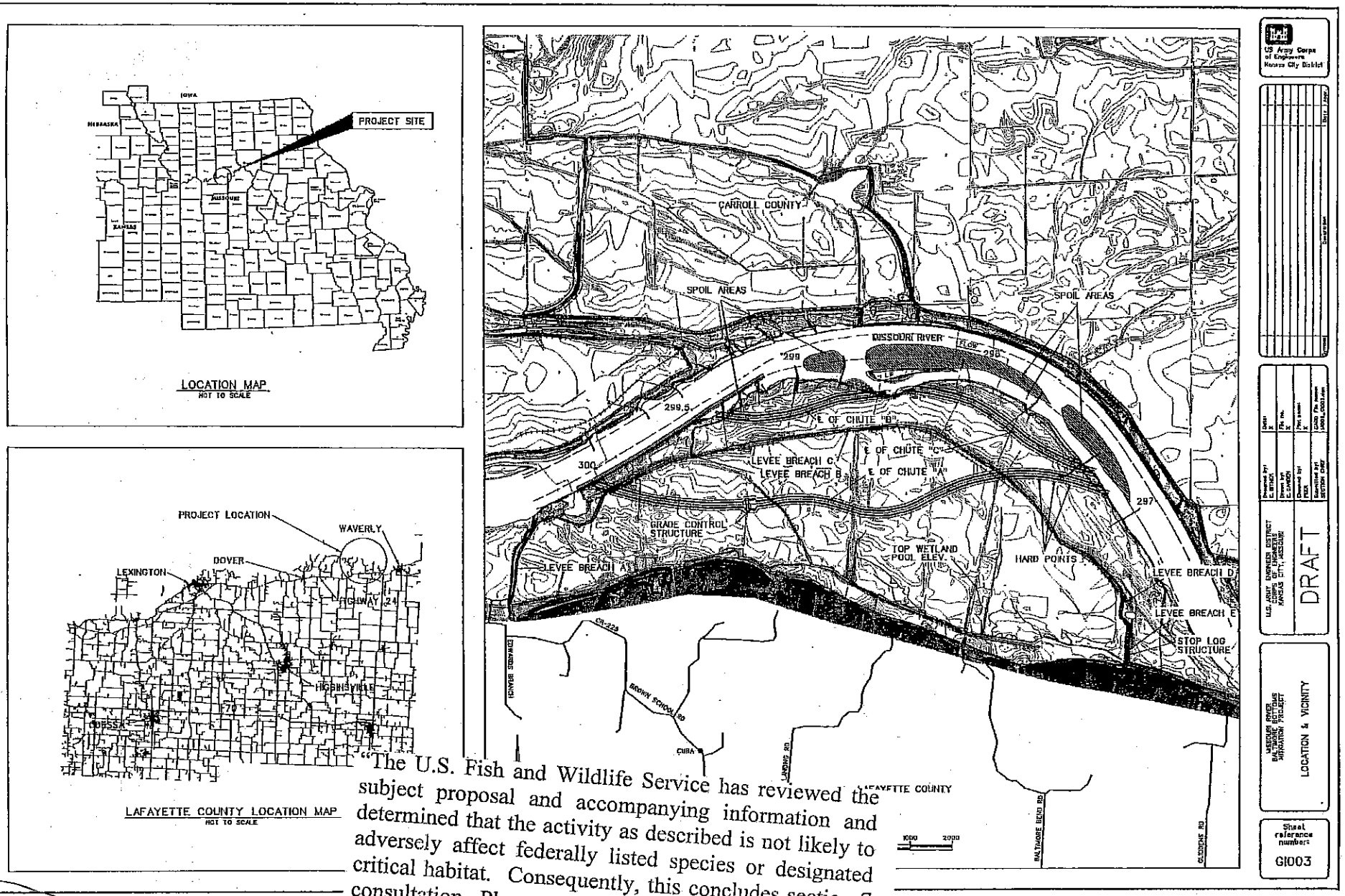
An accreted land study conducted by the Corps found that the entire project area consists of accreted land, with most of the accretion occurring since 1879. Because the project area consists of recently accreted land and no archeological sites, historic structures, or shipwrecks have been recorded in the project area, it is unlikely that the project would impact historic properties or sites that may be eligible for inclusion on the NRHP. Therefore, we have determined that an archeological survey of the project area is not warranted. SHPO concurred with this determination in a letter dated August 14, 2006. However, the Corps will take into consideration any information from affiliated Native American tribes or the public on any sites or traditional cultural properties that may be of concern.

ENDANGERED SPECIES: In compliance with the Endangered Species Act, a preliminary determination has been made that the described work is not likely to adversely affect species designated as threatened or endangered or adversely modify or destroy critical habitat. In order to complete our evaluation of this activity, comments are being solicited from the U.S. Fish and Wildlife Service and other interested agencies and individuals.

FLOODPLAINS: This activity is being reviewed in accordance with Executive Order 11988, Floodplain Management, which discourages direct or indirect support of floodplain development whenever there is a practicable alternative. By this public notice, comments are requested from individuals and agencies that believe the described work will adversely impact the floodplain.

WATER QUALITY CERTIFICATION: Section 401 of the Clean Water Act (33 USC 1341) requires that all discharges of dredged or fill material must be certified by the appropriate state agency as complying with applicable effluent limitations and water quality standards. This public notice serves as an application to the state in which the discharge site is located for certification of the discharge. The discharge must be certified before Department of the Army authorization can be issued. Certification, if issued, expresses the state's opinion that the discharge will not violate applicable water quality standards.

PUBLIC INTEREST REVIEW: The decision to issue authorization will be based on an evaluation of the probable impact including the cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue



"The U.S. Fish and Wildlife Service has reviewed the subject proposal and accompanying information and determined that the activity as described is not likely to adversely affect federally listed species or designated critical habitat. Consequently, this concludes section 7 consultation. Please contact the Missouri Department of Conservation (573/522-4115) for state listed species of concern."

for the Field Supervisor

10/15/2006
Date

SUPPLEMENTAL PUBLIC NOTICE

US Army Corps
of Engineers
Kansas City District

Permit No. 200602731
Issue Date: October 26, 2006
Expiration Date: November 10, 2006

15-Day Notice

JOINT PUBLIC NOTICE: This public notice is issued jointly with the Missouri Department of Natural Resources, Water Pollution Control Program. The Department of Natural Resources will use the comments to this notice in deciding whether to grant Section 401 Water Quality Certification. Those commenting are requested to furnish a copy of their comments to the Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102.

APPLICANT: Kansas City District, Corps of Engineers
700 Federal Building
Kansas City, Missouri 64106-2896

PROJECT LOCATION (As shown on the attached drawings): The proposed project is located in and along the right over bank of the Missouri River, between river miles (RM) 297.0 and 300.1. The Baltimore Bottoms Unit occupies approximately 1,626 acres of land on the western floodplain. This land is owned and managed by the U.S. Fish and Wildlife Service as part of the Big Muddy National Fish and Wildlife Refuge. The site is located two miles west of Waverly, Missouri in Sections 15, 16, and 17, Township 51 North, Range 24 and 25 West, in Lafayette County, Missouri.

AUTHORITY: The Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project as authorized in the Water Resources Development Acts of 1986 and 1999 (Public Law 99-662) and Section 404 of the Clean Water Act (33 USC 1344).

ACTIVITY (As shown on the attached drawings): **PROPOSED WORK:** The U.S. Army Corps of Engineers (USACE) proposes to restore fisheries and wildlife habitat at the Big Muddy National Fish and Wildlife Refuge, at a site known as the Baltimore Bottoms Unit. This work is in addition to similar habitat construction previously proposed for this site. **Please see Public Notice Number 200602731 for associated work.** The additional work consists of the creation of a 1,720-foot long revetment chute and a bank notch for shallow water habitat development. The chute will be constructed with steep side slopes and the average depth of excavation will be 17 feet. The invert of the chute will be constructed at –5 Construction Reference Plane (CRP), to

of recently accreted land and no archeological sites, historic structures, or shipwrecks have been recorded in the project area, it is unlikely that the project would impact historic properties or sites that may be eligible for inclusion on the NRHP. Therefore, we have determined that an archeological survey of the project area is not warranted. SHPO concurred with this determination in a letter dated August 14, 2006. However, the Corps will take into consideration any information from affiliated Native American tribes or the public on any sites or traditional cultural properties that may be of concern.

ENDANGERED SPECIES: In compliance with the Endangered Species Act, a preliminary determination has been made that the described work is not likely to adversely affect species designated as threatened or endangered or adversely modify or destroy critical habitat. In order to complete our evaluation of this activity, comments are being solicited from the U.S. Fish and Wildlife Service and other interested agencies and individuals.

FLOODPLAINS: This activity is being reviewed in accordance with Executive Order 11988, Floodplain Management, which discourages direct or indirect support of floodplain development whenever there is a practicable alternative. By this public notice, comments are requested from individuals and agencies that believe the described work will adversely impact the floodplain.

WATER QUALITY CERTIFICATION: Section 401 of the Clean Water Act (33 USC 1341) requires that all discharges of dredged or fill material must be certified by the appropriate state agency as complying with applicable effluent limitations and water quality standards. This public notice serves as an application to the state in which the discharge site is located for certification of the discharge. The discharge must be certified before Department of the Army authorization can be issued. Certification, if issued, expresses the state's opinion that the discharge will not violate applicable water quality standards.

PUBLIC INTEREST REVIEW: The decision to issue authorization will be based on an evaluation of the probable impact including the cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, esthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and, in general, the needs and welfare of the people. The evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency under authority of Section 404(b) of the Clean Water Act (33 USC 1344). The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny an authorization for this proposal. To make this decision, comments are used to address impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in

PRELIMINARY SECTION 404(b)(1) EVALUATION REPORT
PUBLIC NOTICE NO. 200602731

	YES	POTENTIAL EFFECTS	NO
I. Physical Effects			
A. Potential destruction of wetlands.....			X
B. Impact on water column.....		X	
C. Covering of benthic communities.....			
II. Chemical-Biological Interactive Effects			
A. Adverse effect of chemical constituents on water column.....			
B. Adverse effect of chemical constituents on benthos			
III. Applicable Water Quality Standards			
A. Will activity be in conformance with applicable standards?.....			
IV. Selection of Disposal Sites			
A. Impacts of fill material on chemical, physical, and biological integrity of aquatic ecosystem.....		X	
B. Have the needs for the proposed activity been considered?.....	X		
C. Have alternatives been considered?.....	X		
D. Impacts on water uses at the proposed disposal site		X	
E. Have mitigation measures to minimize harmful effects been considered?.....	X		
V. Contamination of Fill Material			
A. Contamination of fill material if from a land source.....			X
VI. Mixing Zone			
A. Have mixing zone determinations been established for each disposal site?.....			N/A
VII. Impacts to Navigation			
A. Impairment to maintenance of navigation.			X
B. Economic impact on navigation and anchorage.....			X
VIII. Public Participation and Coordination			
A. Will a public interest review be conducted?.....	X		

"The U.S. Fish and Wildlife Service has reviewed the subject proposal and accompanying information and determined that the activity as described is not likely to adversely affect federally listed species or designated critical habitat. Consequently, this concludes section 7 consultation. Please contact the Missouri Department of Conservation (573/522-4115) for state listed species of concern"

for the Field Supervisor

11/14/2006
Date

PUBLIC NOTICE

US Army Corps
of Engineers
Kansas City District

Permit No. 200602731
Issue Date: October 11, 2006
Expiration Date: November 10, 2006

30-Day Notice

JOINT PUBLIC NOTICE: This public notice is issued jointly with the Missouri Department of Natural Resources, Water Pollution Control Program. The Department of Natural Resources will use the comments to this notice in deciding whether to grant Section 401 Water Quality Certification. Those commenting are requested to furnish a copy of their comments to the Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102.

APPLICANT: Kansas City District, Corps of Engineers
700 Federal Building
Kansas City, Missouri 64106-2896

PROJECT LOCATION (As shown on the attached drawings): The proposed project is located in and along the right over bank of the Missouri River, between river miles (RM) 297.0 and 300.1. The Baltimore Bottoms Unit occupies approximately 1,500 acres of land on the western floodplain. This land is owned and managed by the U.S. Fish and Wildlife Service as part of the Big Muddy National Fish and Wildlife Refuge. The site is located two miles west of Waverly, Missouri in Sections 15, 16, and 17, Township 51 North, Range 24 and 25 West, in Lafayette County, Missouri.

AUTHORITY: The Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project as authorized in the Water Resources Development Acts of 1986 and 1999 (Public Law 99-662) and Section 404 of the Clean Water Act (33 USC 1344).

ACTIVITY (As shown on the attached drawings): **PROPOSED WORK:** The U.S. Army Corps of Engineers (USACE) proposes to restore fisheries and wildlife habitat at the Big Muddy National Fish and Wildlife Refuge, at a site known as the Baltimore Bottoms Unit. Aerial maps of the Baltimore Bottoms Unit area indicate that there was a historic chute traversing the area. Placement of revetments and closure dikes during the construction of the Missouri River Bank Stabilization and Navigation Project (BSNP) greatly reduced flows through the chute and resulted in aquatic habitat degradation. At present, this historic chute is not connected to the river. This project proposes to construct, create, and enhance fish and wildlife habitat and add to the development of Shallow Water Habitat (SWH) in the Missouri River. The chute restoration,

wetland, and shallow water habitat development at the Big Muddy National Fish and Wildlife Refuge, Baltimore Bottoms Unit, includes the construction of three flow-through side chutes of varying lengths and widths (the chutes will be designed to erode naturally over time). The three chutes will be approximately 12,665; 4,190, and 4850 lineal feet in length. The chutes will be constructed with steep side slopes and the average depth of excavation will be 20 feet. The invert of the chutes will be constructed at –6 (large chute) and -5 (small chutes) Construction Reference Plane (CRP), to create immediate shallow water habitat in the chutes, allow the chutes to evolve over time, and minimize the bedload entering the chutes from the main channel. A total of approximately 15,000 tons of rock will be placed for the three grade control structures. Rock placed on the control structures will be consistent with quarry-run rock used for construction and operation and maintenance of the BSNP, i.e. stone fill dikes and revetments. Existing stone and/or pile dikes and revetments along the chute alignments will be notched a minimum of 75-ft to allow future widening of the chutes through erosion. It is estimated that approximately 1,427,000 yd^3 of material will be excavated for the chutes. The excavated spoil material will be disposed of directly in the Missouri River (less than three-inches in diameter or side cast adjacent to the chutes (greater than three-inches in diameter). Cleared trees will be placed along the high bank adjacent to the chute alignments and will be allowed to fall into the eroding chutes to increase aquatic habitat diversity. The cleared trees consist primarily of cottonwoods and silver maples. Chute construction will create approximately 66.2 acres of shallow water habitat immediately after construction, and at least 113.7 acres after the chute erodes to the design width. Additionally, a small non-Federal levee will be breeched in strategic locations to create and enhance approximately 1060 acres of wetland habitat, and a total of approximately 533 acres of farmland will be converted to bottomland hardwood trees and native grasslands. The purpose of the project is to create shallow water habitat by increasing the aquatic habitat with a side channel chute, create and enhance wetland habitat through breeches in Hodge Levee, and return and portion of the site to habitat conducive to resident and migratory species. A preliminary determination has been made that the proposed work would be authorized by Nationwide Permit No. 27, Stream and Wetland Restoration Activities.

WETLANDS: A preliminary jurisdictional determination indicated that no wetlands will be impacted from the construction of the three side channel chutes. The completed project will create and enhance up to 1,060 acres of wetlands through the breeching of Hodge Levee and the construction of a stop-log structure near the southeast corner of the site.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1968, as amended: The Corps has made a preliminary determination that the proposed project would not result in significant degradation of the human environment and therefore the proposed project would support a Finding of No Significant Impact (FONSI). The Corps will utilize comments received in response to this Public Notice to complete our evaluation of the project for compliance with the requirements of NEPA, and other Federal, state, and local regulations, including this review for project compliance with the requirements of Section 404 of the Clean Water Act. The Corps has made a preliminary determination that the project as proposed would not be contrary to the public interest and is in compliance with the Section 404(b)(1) Guidelines.

DRAWINGS: The attached drawings provide location details of the proposed project.

PROPERTY ADJACENT TO PROJECT AREA: Property adjacent to the project site is owned by the USFWS and the MDC. Property owners adjacent to the proposed project area will be notified directly to inform them of the project and to request their comments.

CULTURAL RESOURCES: The proposed project has been reviewed in compliance with the National Historic Preservation Act of 1966 (Public Law 89-665). Background research that consisted of a review of the National Register of Historic Places (NRHP), a site records search, and a review of historic channel and shipwreck maps was conducted for the project. No historic properties listed in the NRHP were identified in the project area. A search of records with the Missouri State Historic Preservation Officer (SHPO) identified no previously recorded archeological sites or historic structures in the immediate area. No shipwrecks were found in the proposed area.

An accreted land study conducted by the Corps found that the entire project area consists of accreted land, with most of the accretion occurring since 1879. Because the project area consists of recently accreted land and no archeological sites, historic structures, or shipwrecks have been recorded in the project area, it is unlikely that the project would impact historic properties or sites that may be eligible for inclusion on the NRHP. Therefore, we have determined that an archeological survey of the project area is not warranted. SHPO concurred with this determination in a letter dated August 14, 2006. However, the Corps will take into consideration any information from affiliated Native American tribes or the public on any sites or traditional cultural properties that may be of concern.

ENDANGERED SPECIES: In compliance with the Endangered Species Act, a preliminary determination has been made that the described work is not likely to adversely affect species designated as threatened or endangered or adversely modify or destroy critical habitat. In order to complete our evaluation of this activity, comments are being solicited from the U.S. Fish and Wildlife Service and other interested agencies and individuals.

FLOODPLAINS: This activity is being reviewed in accordance with Executive Order 11988, Floodplain Management, which discourages direct or indirect support of floodplain development whenever there is a practicable alternative. By this public notice, comments are requested from individuals and agencies that believe the described work will adversely impact the floodplain.

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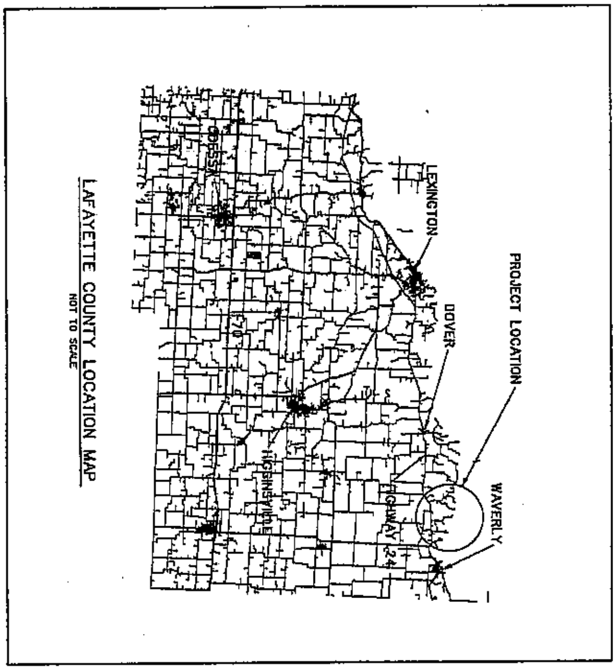
from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof; among those are conservation, economics, esthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and, in general, the needs and welfare of the people. The evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency under authority of Section 404(b) of the Clean Water Act (33 USC 1344). The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny an authorization for this proposal. To make this decision, comments are used to address impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

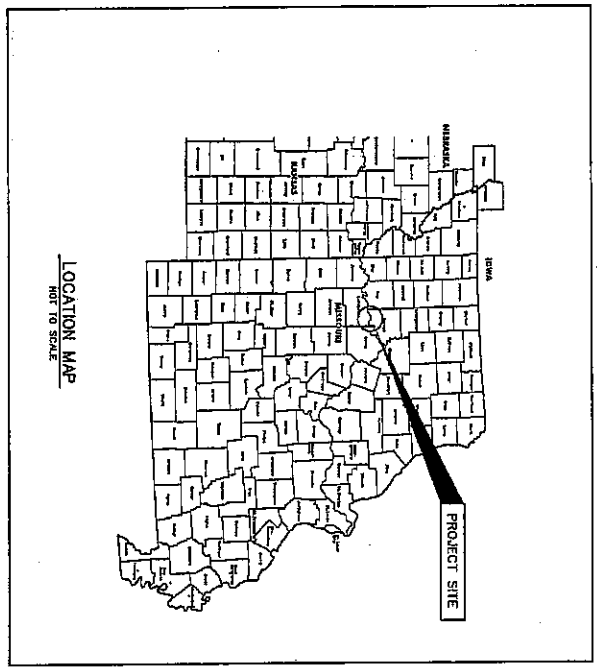
COMMENTS: This notice is provided to outline details of the above-described activity so this District may consider all pertinent comments prior to determining if issuance of an authorization would be in the public interest. Any interested party is invited to submit to this office written facts or objections relative to the activity on or before the public notice expiration date. Comments both favorable and unfavorable will be accepted and made a part of the record and will receive full consideration in determining whether it would be in the public interest to issue the Department of the Army authorization. Copies of all comments, including names and addresses of commenters, may be provided to the applicant. Comments should be mailed to the address shown below.

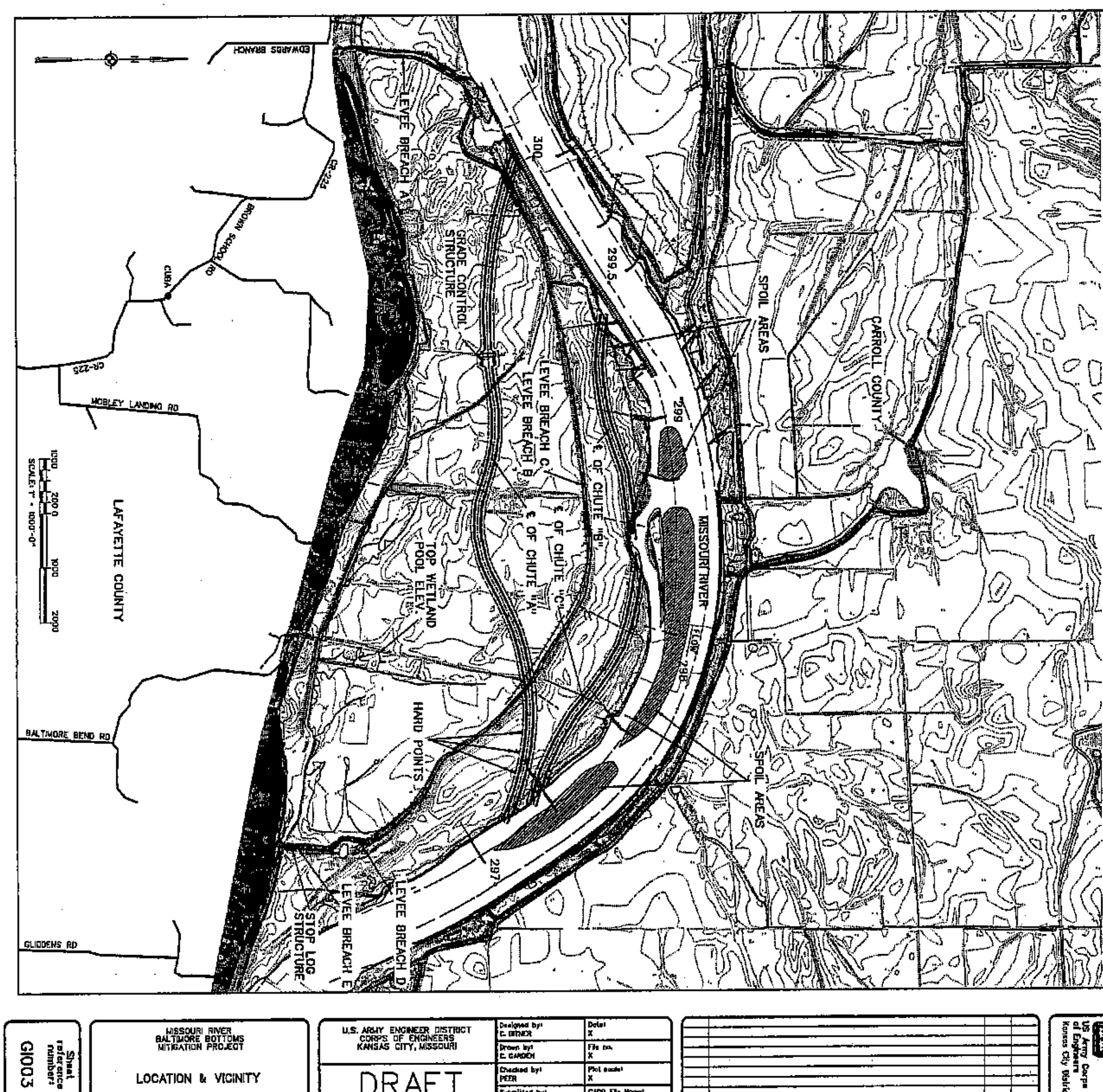
PUBLIC HEARING: Any person may request, in writing, prior to the expiration date of this public notice, that a public hearing be held to consider this application. Such requests shall state, with particularity, the reasons for holding a public hearing.

ADDITIONAL INFORMATION: Additional information about this application may be obtained by contacting Mr. Matthew Vandenberg, U.S. Army Corps of Engineers, Environmental Resources Section, 601 East 12th Street, Room 843, Kansas City, Missouri 64106, at telephone 816-983-3146, (FAX 816-426-2142) or via e-mail at matthew.d.vandenberg@usace.army.mil. All comments to this public notice should be directed to the above address.

NOTICE TO EDITORS: This notice is provided as background information for your use in formatting news stories. This notice is not a contract for classified display advertising.



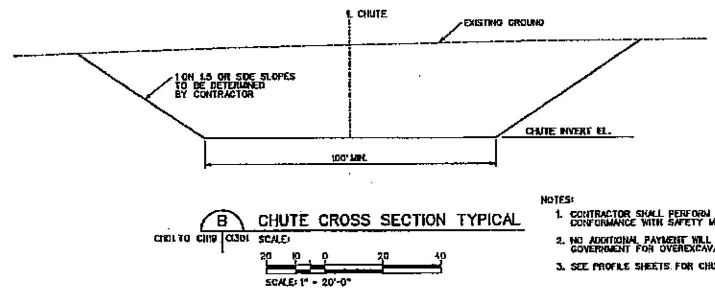




Sheet reference number:	MISSOURI RIVER BALTIMORE BOTTOMS MITIGATION PROJECT	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS KANSAS CITY, MISSOURI	Designed by: C. DITMER	Date: X
G1003	LOCATION & VICINITY	DRAFT	Drawn by: C. GARDEN	File no. X
			Checked by: PEER	Plot scale: X
			Submitted by: SECTION CHIEF	CADD File Name: M008_G1003.dgn

Symbol	Description	Date	Appr.

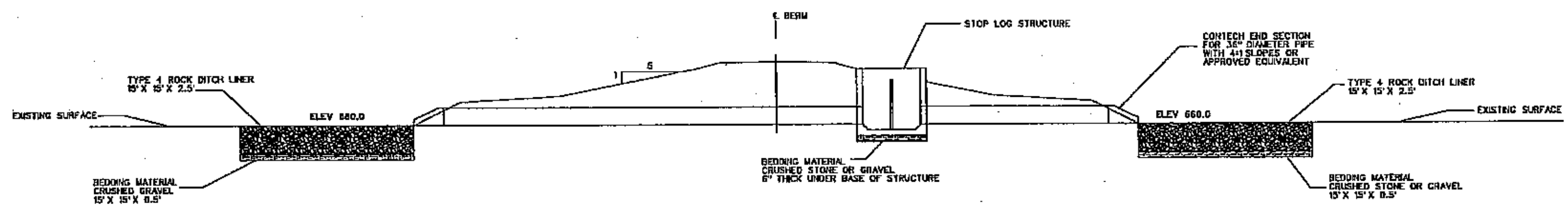
US Army Corps of Engineers Kansas City District



B CHUTE CROSS SECTION TYPICAL

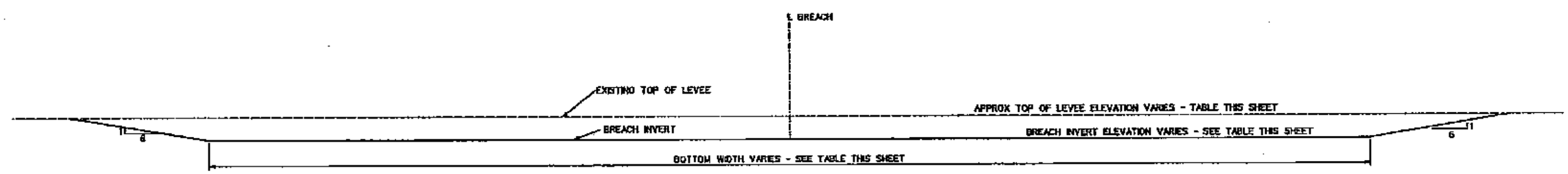
CI101 TO CI119 | CI301 SCALE: 1" = 20'-0"

NOTES:
1. CONTRACTOR SHALL PERFORM EXCAVATION IN CONFORMANCE WITH SAFETY MANUAL EM 385-1-1.
2. NO ADDITIONAL PAYMENT WILL BE MADE BY THE GOVERNMENT FOR OVEREXCAVATION.
3. SEE PROFILE SHEETS FOR CHUTE INVERT ELEVATION.



C LEVEE BREACH WTIH STOP LOG STRUCTURE

X | CI301 SCALE:NTS



NOTES:
1. CONTRACTOR SHALL PERFORM EXCAVATION IN CONFORMANCE WITH SAFETY MANUAL EM 385-1-1.
2. NO ADDITIONAL PAYMENT WILL BE MADE BY THE GOVERNMENT FOR OVEREXCAVATION.

A LEVEE BREACH TYPICAL

CI120 | CI301 SCALE: 1" = 20'-0"

TABLE

	BOTTOM WIDTH	INVERT ELEVATION	APPROXIMATE LEVEE ELEVATION
LEVEE BREACH A	500'	674.0	682
LEVEE BREACH B	500'	675.0	681
LEVEE BREACH C	600'	672.0	680
LEVEE BREACH D	500'	668.0	679
LEVEE BREACH E	115'	669.0	679

US Army Corps of Engineers
Kansas City District

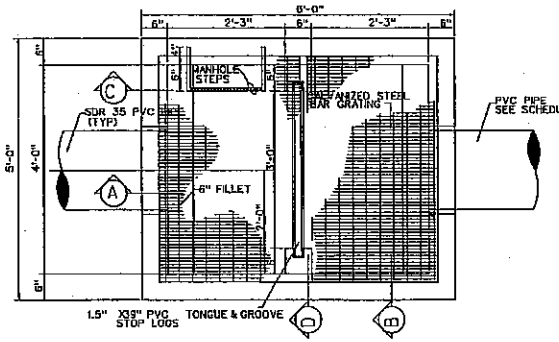
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

DRAFT

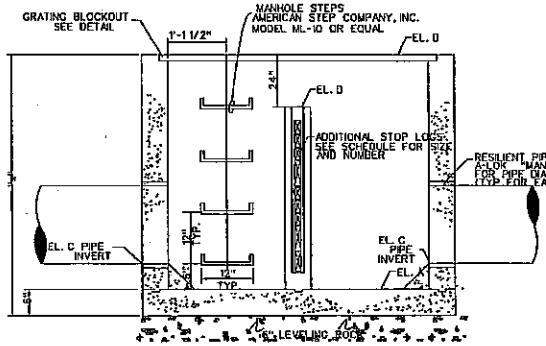
MISSOURI RIVER
BALTIMORE BOTTOMS
MITIGATION PROJECT

TYPICAL CROSS SECTION

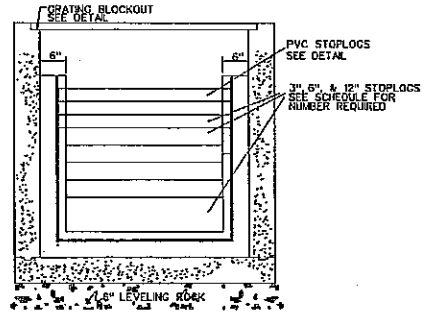
Sheet reference number:
CI301



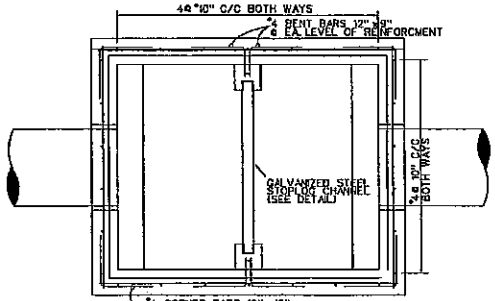
PLAN - STRUCTURE



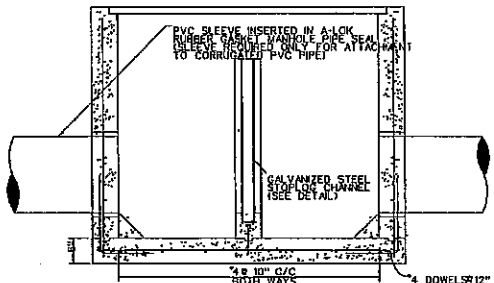
A ELEV - STRUCTURE



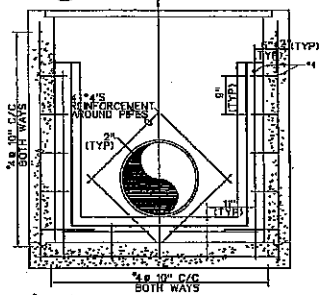
B ELEV - STRUCTURE



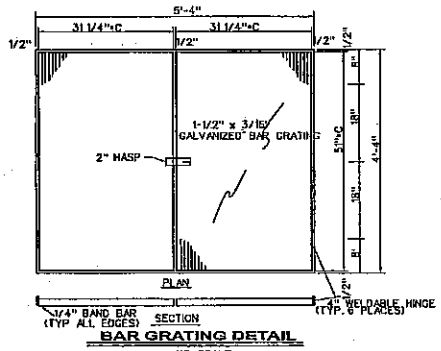
PLAN - STR. REINFORCING



C ELEV - STR. REINFORCING



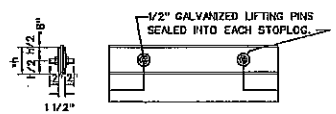
D ELEV - STR. REINFORCING



BAR GRATING DETAIL

NO SCALE

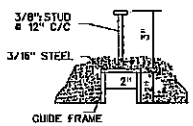
GENERAL NOTE:
1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. MAXIMUM GALLONS OF MIXING WATER PER SACK OF CEMENT SHALL BE 5.75. THE CEMENT FACTOR OR THE QUANTITY OF CEMENT USED IN ANY CUBIC YARD OF CONCRETE, SHALL BE A MINIMUM OF 6 SACKS.



NOTES:
1. SEE STOPLOG SCHEDULE FOR DIMENSION AND NUMBER OF STOPLOGS REQUIRED.
2. STOPLOGS SHALL BE CONSTRUCTED FROM 1/2" EXTRUDED PVC SHEETS.

STOPLOG DETAILS

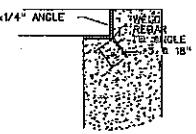
NO SCALE



NOTE:
1. STOP LOG GUIDE FRAME SHALL BE 3/16" STEEL FABRICATED AS SHOWN IN ACCOMPANYING DWG FOR EACH STRUCTURE. FRAME SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. GUIDE FRAMES SHALL BE PROVIDED BY STOPLOG MANUFACTURE OR ENGINEER APPROVED EQUAL.

STOPLOG GUIDE FRAME DETAIL

NO SCALE



NOTES:
1. BAR GRATING NOT SHOWN FOR CLARITY.
2. SUPPORT ANGLE SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

BAR GRATING SUPPORT ANGLE DETAIL

NO SCALE

NOTE:
WATER CONTROL STRUCTURES 1 SHALL USE THIS STOPLOG STRUCTURE DETAIL.

WATER CONTROL STRUCTURE TABLE

STRUCTURE DATA							STOPLOG DATA		
STR. #	PIPE DIA.	"X" DIM.	TOP ELEV."B"	PIPE INV ELEV."C"	BOTTOM ELEV."A"	LOGS TOP ELEV. "D"	# OF 3"	# OF 6"	# OF 12"
1	36"	10.0'	669.0	660.0	659.5	667.0	12	8	3

US Army Corps of Engineers Kansas City District

Date	Description

Designed by | Drawn by | Checked by | Submitted by | Date | File no. | Proj. symbol | CADD File Name

U.S. ARMY ENGINEER DISTRICT KANSAS CITY, MISSOURI

DRAFT

MISSOURI RIVER BANK STABILIZATION & NAVIGATION PROJECT

WATER CONTROL STRUCTURE

Sheet reference numbers

C1502

PRELIMINARY SECTION 404(b)(1) EVALUATION REPORT
PUBLIC NOTICE NO. 200602731

	YES	POTENTIAL EFFECTS	NO
I. Physical Effects			
A. Potential destruction of wetlands.....			X
B. Impact on water column.....		X	
C. Covering of benthic communities.....		X	
II. Chemical-Biological Interactive Effects			X
A. Adverse effect of chemical constituents on water column.....			X
B. Adverse effect of chemical constituents on benthos			
III. Applicable Water Quality Standards			
A. Will activity be in conformance with applicable standards?.....	X		
IV. Selection of Disposal Sites			
A. Impacts of fill material on chemical, physical, and biological integrity of aquatic ecosystem.....		X	
B. Have the needs for the proposed activity been considered?.....	X		
C. Have alternatives been considered?.....	X		
D. Impacts on water uses at the proposed disposal site		X	
E. Have mitigation measures to minimize harmful effects been considered?.....	X		
V. Contamination of Fill Material			
A. Contamination of fill material if from a land source.....			X
VI. Mixing Zone			
A. Have mixing zone determinations been established for each disposal site?.....			N/A
VII. Impacts to Navigation			
A. Impairment to maintenance of navigation.			X
B. Economic impact on navigation and anchorage.....			X
VIII. Public Participation and Coordination			
A. Will a public interest review be conducted?.....	X		

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3-Aug-06

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Vandenberg, Matthew D NWK

From: Dacey, Kevin - Columbia, MO [kevin.dacey@mo.usda.gov]
Sent: Thursday, October 26, 2006 6:48 AM
To: Vandenberg, Matthew D NWK
Cc: harold.deckerd@mo.usda.gov; Chris.Hamilton@mo.usda.gov; david.howard@mo.usda.gov; Neal Young; Frazier, Debbie - Warrensburg, MO; Bitner, Chance J NWK; Tom_Bell@fws.gov
Subject: RE: Baltimore Bottoms SWH site

Matt,

I've been off on annual leave most of this week and just getting back. One of the items in the cranker before I left was the disposition of the Compatible Use Authorization (CUA) of the channel work planned for the Baltimore Bend WRP site owned by the U.S Fish and Wildlife Service located in Lafayette County. The CUA is an intricate part of the WRP and is a coordinating effort between NRCS and the landowner (USFWS) to permit certain activities on WRP sites. This has been approved by Harold Deckerd and a letter sent to the USFWS concurring with their request to allow USACE to construct three chutes on this WRP site.

I visited with Tom Bell about some post construction rehab work that was not clear on this original CUA that we are to address in an Addendum to the original CUA. This will actually mirror some of the specifications of Jameson Island regarding vegetation re-establishment to the WRP site once work is close to completion or completed. This will also bring the site back to pre-construction state due to mobilization and access by heavy equipment. It ultimately will discourage "unauthorized access" by the general public which is a chronic problem on many of these remote WRP sites.

I will notify you once again when the addendum is activate once NRCS and USFWS have coordinated this effort. Thanks for keeping the "loop" active.

Kevin Dacey
Wetland Wildlife Biologist
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Voice: 573/876-9356
Fax: 573/876-0913

From: Vandenberg, Matthew D NWK [mailto:Matthew.D.Vandenberg@nwk02.usace.army.mil]
Sent: Wednesday, October 11, 2006 11:48 AM
To: Dacey, Kevin - Columbia, MO
Subject: Baltimore Bottoms SWH site

Kevin,
The attached DRAFT document is the PIR for the Baltimore Bottoms site. A large portion of the project will be constructed on lands with a Wetlands Reserve Program (WRP) easement to the NRCS, specifically during construction of Chute A. Is there specific coordination that we need to conduct with your Agency in order to satisfy NRCS requirements, such as a Compatible Use Agreement? If so, could you please inform me and provide me with information of what needs to be completed. This is somewhat new to me so any information/assistance you could provide would be most helpful. Thanks,

Vandenberg, Matthew D NWK

From: Dacey, Kevin - Columbia, MO [kevin.dacey@mo.usda.gov]
Sent: Thursday, October 12, 2006 1:19 PM
To: Vandenberg, Matthew D NWK
Cc: Deckerd, Harold - Columbia, MO; Hamilton, Chris - Columbia, MO; david.howard@mo.usda.gov; Neal Young; Frazier, Debbie - Warrensburg, MO; Tom_Bell@fws.gov
Subject: RE: Baltimore Bottoms SWH site

Matt,

We are in the process of finalizing the Compatible Use Authorization (CUA) that was compiled by the Wetland Emphasis Team (WET) out of Warrensburg in conjunction with the Landowner (USFWS). Once finalized, it will go to the Wetland Reserve Program Manager, Harold Deckerd here in the NRCS State Office for final approval.

I will contact you when this occurs so that you will know when the USFWS has the CUA in their possession. It should be a great riverine feature when completed. Thanks for the coordination.

Kevin Dacey
Wetland Wildlife Biologist
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From: Vandenberg, Matthew D NWK [mailto:Matthew.D.Vandenberg@nwk02.usace.army.mil]
Sent: Wednesday, October 11, 2006 11:48 AM
To: Dacey, Kevin - Columbia, MO
Subject: Baltimore Bottoms SWH site

Kevin,
The attached DRAFT document is the PIR for the Baltimore Bottoms site. A large portion of the project will be constructed on lands with a Wetlands Reserve Program (WRP) easement to the NRCS, specifically during construction of Chute A. Is there specific coordination that we need to conduct with your Agency in order to satisfy NRCS requirements, such as a Compatible Use Agreement? If so, could you please inform me and provide me with information of what needs to be completed. This is somewhat new to me so any information/assistance you could provide would be most helpful. Thanks,

Matthew D. Vandenberg
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601 East 12th Street
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Phone: 816/389-3146
FAX: 816/389-2025

CENWK OD-R 05 October 2006

MEMORANDUM FOR PM-PR (Vandenberg)

SUBJECT: Onsite Wetland Review for Channel Excavations at Baltimore Bottoms in Carroll County, Missouri.

1. On 27 September 2006 I accompanied Matt Vandenberg to Baltimore Bottoms to investigate areas identified as potential wetlands. These potential wetland areas were identified in the project area by applying aerial photograph interpretations of color tone and photographic textures that were apparent on the aerial photos.

2. We reviewed the identified locations along the Missouri River bank where excavation of the proposed channels will occur. Data forms, consistent with the Corps of Engineers, Wetland Delineation Manual, were completed at each site. It was determined that these areas do not meet the three parameters, hydrology, hydric soil and hydrophytic vegetation, necessary to be considered wetland.

3. In addition, we reviewed several areas along the proposed channel alignments and similarly no wetland areas were encountered.

Douglas R. Berka
Regulatory Project Manager
Operations Division, Regulatory

Vandenberg, Matthew D NWK

From: Barbara_Moran@fws.gov
Sent: Wednesday, October 18, 2006 12:03 PM
To: Vandenberg, Matthew D NWK
Cc: Tom_Bell@fws.gov; Jane_Ledwin@fws.gov; Wedge_Watkins@fws.gov
Subject: Baltimore Bottom PIR

Hi, Matt -
Thanks for the opportunity to review the PIR for the Baltimore Bottom Chute Project. I have some comments.

1. Baltimore Bottom is singular, only one bottom, so refuge unit name is Baltimore Bottom.
2. Total acreage of the unit is 1,626 acres. We acquired another tract, purchased in May, 2005.
3. River Miles of area is 296 to 300 now.
4. Table 1-1 site habitat goals don't seem to add up correctly. The forested wetlands should be everything between the ag levee and the river; the old croplands are stocked with cottonwoods, sycamore, willows, box elder, and silver maple saplings. Also, the future area to become forested wetlands will be much of the former cropland inside of the levee.
5. Ch 2 Alternatives, in the introduction says that up to (two) 1060 acres of emergent wetlands will be developed. This doesn't show in table 1-1.
6. Under the alternatives when you discuss the existing trees, present are several species, including cottonwood, sycamore, box elder, willows, and silver maple.
7. Under Alt. One, Chute A will impact 760 acres of agricultural land, not 52.4 acres.
8. Under Alt. Two, last paragraph, the 388 acres of cropland would be planted to bottomland tree and shrub species. Also, this work was not funded.
9. Under Evaluation of Alternatives, towards end of long 3rd paragraph, the proposed project area contains nearby (not adjacent) shallow water habitat areas at Cranberry Bend Unit of the refuge. Baltimore Bend CA is an upland and has no shallow water habitat.
10. In Table 2-1, under socioeconomic resources, you don't mention insignificant adverse effects to local economy for loss of ag land.
11. Under 3.5.1 Aquatic Resources, 2nd sentence, there isn't any shallow water habitat located along the southwest corner of the site.
12. Section 3.6 Again, unit is 1,625 acres.
13. 5.4 - 1,625 acres, purchased in 2002 and 2005.
14. 5.7 - Table 5-2 why include an out of date schedule?

Barbara Moran
Wildlife Refuge Specialist
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Vandenberg, Matthew D NWK

From: Jane_Ledwin@fws.gov
Sent: Monday, October 16, 2006 9:08 AM
To: Vandenberg, Matthew D NWK
Cc: Barbara_Moran@fws.gov; tom_bell@fws.gov
Subject: Re: Baltimore Bottoms

Matt -

I looked over the PIR had have only a couple of editorial suggestions:

1.)Table 1.1 - Double check the outputs. the last three categories appear at odds with the rest of the table.

2.) Adaptive management - In the M&E section AM is referred to as something that is taken off the shelf when needed to address an issue. This is an erroneous understanding of AM. Rather, our entire process of project concept, development, and continuing implementation is AM. We will essentially test techniques to develop various habitats and the biologic responses to them. We may need to modify our techniques, or even our habitats, but that is only one step in the process which involves testing, (some form of) monitoring, and feedback into design/operation. Ideally, all the PIRs would reflect this understanding rather than relegating the AM concept to post-construction "tweaking."

3.) Based on the information in the PIR and your 9/28/06 email, the Service concurs with the Corps determination that the project is not likely to adversely affect a federally listed species. Should the scope of the project changes, please contact this office.

Good job on the PIR. I understand the refuge will be sending you comments directly. Barbara, please cc me as well. Thanks-

Jane

****
Jane Ledwin
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
101 Park DeVille Drive
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"Vandenberg, Matthew D NWK" <Matthew.D.Vandenberg@nwk02.usace.army.mil>

09/28/2006 03:48 PM

To: <jane_ledwin@fws.gov>, <tom_bell@fws.gov>, <Barbara_Moran@fws.gov>

cc:

Subject: Baltimore Bottoms

Vandenberg, Matthew D NWK

From: Vandenberg, Matthew D NWK

Sent: Thursday, September 28, 2006 3:49 PM

To: 'jane_ledwin@fws.gov'; 'tom_bell@fws.gov'; 'Barbara_Moran@fws.gov'

Subject: Baltimore Bottoms

Team,
Yesterday Doug Berka from our Regulatory Branch and I went to the Baltimore Bottoms site to conduct some soil sampling and verify some wetland areas. During this visit, we also surveyed the area along the Missouri River for bat habitat (trees with shedding or exfoliating bark, 14-16 inches dbh, and dead trees). The trees in the areas where the entrances and exits of the chutes would be constructed (areas of impact) although large, did not have shaggy bark and no dead trees were spotted. The diameter of many of the trees we saw, particularly around the existing island were small and likely less than 8 inches. We did spot some dead trees; however, they were located along the Missouri River in areas where no construction is anticipated, thus they would not be removed. We did not make it all the way down to the exit of Chute A but believe the vegetation at that location is no different than that along the areas surveyed and believe no impacts to bats will occur. We will remind the construction crews look again for and avoid "bat trees" during the clearing of the chutes entrances/exits. Hopefully, with the completion of the project, we will be able to attract some bats to the area and expand their range.

Matthew D. Vandenberg
Environmental Resources Specialist
US Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106
Phone: 816/389-3146
FAX: 816/389-2025

Heritage Review Report

Missouri Department of Conservation
Policy Coordination Unit
P. O. Box 180
Jefferson City, MO 65102
573-522-4115 X 3250 -- Shannon.Cave@mdc.mo.gov

Stuart Miller

Project type: new chute
Location report covers: T51N R24W S15 and ½ mile into adjoining sections
County: Lafayette
Described in query as: Baltimore Bend Unit of Big Muddy NWR
Date query received: September 13, 2006

This is not a site clearance letter, but a report of Missouri Department of Conservation records concerning public lands and sensitive resources known to be near and possibly affected by the proposed project.

Prepared by:

September 13, 2006

Terrestrial Records of Species/Habitats with Federal or State concerns:

The Missouri River and its floodplain are home to a number of species of state and federal concern, including pallid sturgeon, gray bats, Indiana bats, bald eagles, lake sturgeon, flathead chubs and others. Species recorded in the river may have records many miles upstream or down, with the following having been recorded in the Missouri River between the Grand and Kansas Rivers:

Species	*Common Name*	*Federal status*	*State Status*	*State Rank*
Scaphirhynchus albus	*Pallid Sturgeon*	*E*	*E*	*S1*
Botaurus lentiginosus	*American Bittern*		*E*	*S1*
Platygobio gracilis	*Flathead Chub*		*E*	*S1*
Carpiodes velifer	*Highfin Carpsucker*			*S2*
Hybognathus placitus	*Plains Minnow*			*S2*
Attaneuria ruralis	*Giant Stone*			*S3*
Cycleptus elongatus	*Blue Sucker*			*S3*
Macrhybopsis gelida	*Sturgeon Chub*			*S3*
Macrhybopsis meeki	*Sicklefin Chub*			*S3*
Macrhybopsis storeriana	*Silver Chub*			*S3*
Polyodon spathula	*Paddlefish*			*S3*
Triops longicaudatus	*Tadpole Shrimp*			*SU*

Bergia texana was recorded on this site in 2002, in a wet swale between the levee and the river. It is not endangered at either state or federal level, but is tracked as an S5 species. S5 means "demonstrably widespread, abundant, and secure in the state, and essentially

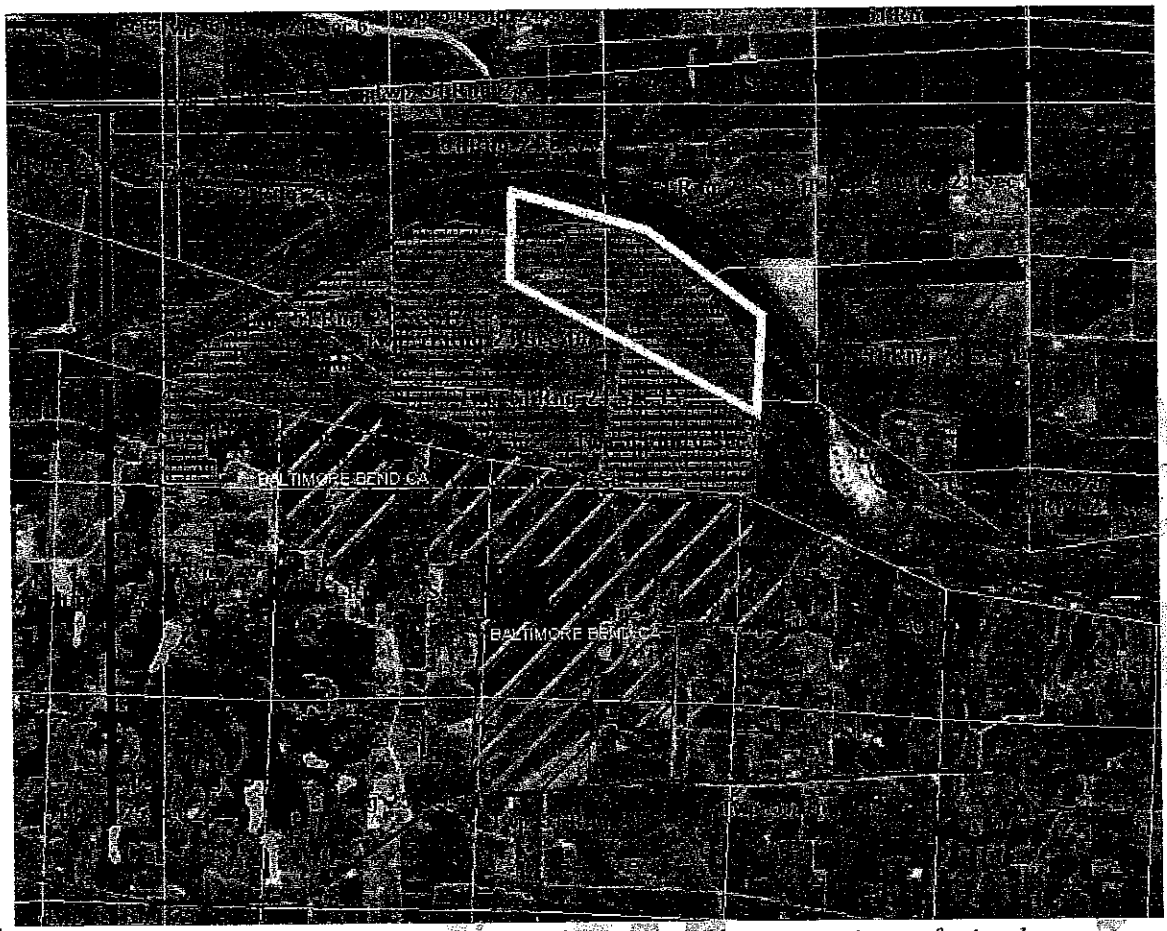
ineradicable under present conditions," so no further action is required. There are also records of garlic mustard and purple loosestrife in this vicinity, both invasive exotic species that should be eliminated wherever possible.

Concerns & management recommendations based on site or project details, not related to specific heritage records:
The project area is in region with known karst geologic features (e.g. caves, springs, and sinkholes, all characterized by subterranean water movement). Such features are not routinely identified in heritage records but may be encountered by the project. Since cave fauna are influenced by changes to water quality, every effort should be made to protect groundwater in the project area. See http://www.mdc.mo.gov/documents/nathis/endangered/karst.pdf for best management information.

Habitat loss can impact populations of grassland birds native to the area, including barn owls (state endangered), northern harriers (state endangered), Henslow's sparrow (imperiled in the state), and greater prairie-chickens (state endangered). Revegetation with native grasses and other flowering plants will minimize the impact of habitat disturbance. Best management practices may be found on-line at http://www.mdc.mo.gov/nathis/endangered/bmp.htm.

Bald eagles (*haliaeetus leucocephalus*, Federally threatened, State endangered) may overwinter or nest in the project area. They are common winter residents in big river habitats and major lakes where they feed on fish. See http://www.mdc.mo.gov/documents/nathis/endangered/baldeagle.pdf for best management recommendations.

Baltimore Bend Bottom Conservation Opportunity Area includes the proposed project site.



A HERITAGE REVIEW provides information about species and habitats of concern that could be affected by the project. Heritage records note things that were positively identified at some date and time, marked at a location that may be more or less precise. Animals move quickly but plant communities can move also. To say "there is a record" does not mean the species/habitat is still there. To say that "there is no record" does not mean the project may not encounter something. Because of this, reports include information about records near but not necessarily on the project site. Three different kinds of information are provided.

- *FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.*
- *STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and protected under the Wildlife Code of Missouri (RSMo 3 CSR 10). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR10-4.111. "State Rank" is numeric rank of relative rarity, protected under general provisions of the Wildlife Code but not endangered.*
- *"Concerns & management recommendations" are things for which one might prudently look. There is no specific heritage record, but our knowledge of the surrounding landscape suggests consideration. 93% of Missouri's land is in private ownership, so most sites have never been carefully inspected by conservation professionals*

This report is not a site clearance letter. Rather, it provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from our Heritage Database into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive natural resources. However, the Heritage Database is only one reference that should be used to evaluate potential adverse impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information and species biological characteristics would additionally ensure that species of conservation concern are appropriately identified and addressed.

Additional information on rare, endangered and watched species may be found at http://www.mdc.mo.gov/nathis/endangered/.. If you would like printed copies of best management practices cited as internet URLs, please contact us.

Vandenberg, Matthew D NWK

From: Pointer, James K NWK
Sent: Wednesday, September 20, 2006 12:33 PM
To: Vandenberg, Matthew D NWK
Cc: Berka, Douglas R NWK
Subject: RE: Baltimore Bottoms JD
Attachments: regmap-june%202006.pdf

Matt,

I have forwarded your e-mail message/request to Doug Berka (OD-RM) as Lafayette County is within the Kansas City Regulatory Office service area. I have attached a Regulatory Office boundary map for your reference. The Township should be 51 north.

Kenny

From: Vandenberg, Matthew D NWK
Sent: Wednesday, September 20, 2006 10:36 AM
To: Pointer, James K NWK
Subject: Baltimore Bottoms JD

Kenny,

This concerns the Baltimore Bottoms Missouri River Mitigation site located northwest of Waverly, Missouri in Lafayette County at River Miles 297.0 to 300.1, Sections 15, 16, and 17, Township 61 North, and Ranges 24 and 25. The attached "Baltimore Bottoms.jpg" map shows that some hydric and partially hydric soils exist south of the Missouri River (brownish-green and blue polygons) and the attached "NWI.jpg" map shows wetlands as they existed in the 1980's.

However, after reviewing aerial photographs from 2004, current land cover maps of the area, talking with USFWS site managers, ground-truthing the site, and professional knowledge of the treed areas along the Missouri River, it has been determined that the elevations of the "forested wetland polygons" are much higher (679 feet) than the OHWM's (665-668 feet) resulting in those area actually being woodland forests. The "emergent wetland polygons" have actually been drained and planted to native grass resulting in a large grassland area with no ponding of water and drainage toward the interior Hodge Levee thence the south-east portion of the site where wetlands currently exist. As such, it has been determined that the proposed project will have no impacts on area wetlands. Could you please provide this office with a preliminary jurisdictional determination that the proposed project will not impacts wetlands? I will try to send the PDF aerial photos under separate email because they exceed the size limit of this email. Thanks,

Matthew D. Vandenberg
Environmental Resources Specialist
US Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106
Phone: 816/389-3146
FAX: 816/389-2025

Vandenberg, Matthew D NWK

From: Vandenberg, Matthew D NWK
Sent: Wednesday, September 20, 2006 10:36 AM
To: Pointer, James K NWK
Subject: Baltimore Bottoms JD
Attachments: Baltimore Bottoms.jpg; NWI.jpg

Kenny,

This concerns the Baltimore Bottoms Missouri River Mitigation site located northwest of Waverly, Missouri in Lafayette County at River Miles 297.0 to 300.1, Sections 15, 16, and 17, Township 61 North, and Ranges 24 and 25. The attached "Baltimore Bottoms.jpg" map shows that some hydric and partially hydric soils exist south of the Missouri River (brownish-green and blue polygons) and the attached "NWI.jpg" map shows wetlands as they existed in the 1980's.

However, after reviewing aerial photographs from 2004, current land cover maps of the area, talking with USFWS site managers, ground-truthing the site, and professional knowledge of the treed areas along the Missouri River, it has been determined that the elevations of the "forested wetland polygons" are much higher (679 feet) than the OHWM's (665-668 feet) resulting in those area actually being woodland forests. The "emergent wetland polygons" have actually been drained and planted to native grass resulting in a large grassland area with no ponding of water and drainage toward the interior Hodge Levee thence the south-east portion of the site where wetlands currently exist. As such, it has been determined that the proposed project will have no impacts on area wetlands. Could you please provide this office with a preliminary jurisdictional determination that the proposed project will not impacts wetlands? I will try to send the PDF aerial photos under separate email because they exceed the size limit of this email. Thanks,

Matthew D. Vandenberg
Environmental Resources Specialist
US Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106
Phone: 816/389-3146
FAX: 816/389-2025

Vandenberg, Matthew D NWK

From: Vandenberg, Matthew D NWK

Sent: Wednesday, September 20, 2006 11:28 AM

To: 'tom_bell@fws.gov'; 'jane_ledwin@fws.gov'; 'Barbara_Moran@fws.gov'; 'Stuart.Miller@mdc.mo.gov'

Subject: DRAFT Baltimore Bottoms PIR

Attachments: Baltimore Island PIR.doc

Team,
Attached is a DRAFT copy of the Baltimore Bottoms PIR for your review and comment. Please disregard the yellow high-lighted areas as those are "work-in-progress". I hope to be sending out the Public Notice shortly so that we may stay on schedule. Please provide any thoughts at your earliest so that we may discuss same.
Thanks again,

Matthew D. Vandenberg
Environmental Resources Specialist
US Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106
Phone: 816/389-3146
FAX: 816/389-2025

Vandenberg, Matthew D NWK

From: Vandenberg, Matthew D NWK

Sent: Tuesday, September 12, 2006 2:05 PM

To: 'tom_bell@fws.gov'; 'jane_ledwin@fws.gov'; 'Barbara_Moran@fws.gov'; 'Stuart.Miller@mdc.mo.gov'

Subject: Informal Endangered Species Consultation

Team,

The proposed Baltimore Bottoms Chute Construction site is located in Lafayette County on the Big Muddy National Fish and Wildlife Refuge at River Miles 297.0 to 300.1. The site contains potential habitat for the bald eagle, pallid sturgeon, and Indiana bat. The Corps believes that the proposed project will have no affects on the Indiana bat as this species is not known to occur in Lafayette County. The proposed project may affect the bald eagle and pallid sturgeon during chute construction through the removal of some large (24" dbh or greater) riparian cottonwood trees and through dredging operations and notching of dikes and stone toe revetment in the Missouri River at the proposed chutes' inlets and outlets. The Corps believes that the overall project will enhance habitat for all three above listed species. Therefore, the Corps has determined that the proposed project is not likely to adversely affect the bald eagle and pallid sturgeon; thus no formal consultation under the ESA will be required. The Corps requests the Service's concurrence with this determination. Additionally, the Corps requests that no adverse impacts to state listed species will result. Thanks,

Matthew D. Vandenberg
Environmental Resources Specialist
US Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106
Phone: 816/389-3146
FAX: 816/389-2025

Vandenberg, Matthew D NWK

From: Jane_Ledwin@fws.gov
Sent: Tuesday, September 12, 2006 3:45 PM
To: Vandenberg, Matthew D NWK
Cc: Barbara_Moran@fws.gov; Stuart.Miller@mdc.mo.gov; Tom_Bell@fws.gov; Charlie_Scott@fws.gov
Subject: Re: Informal Endangered Species Consultation

Matt -

Regarding the species.

1.) I. bat - I would recommend you assess the project area for suitable habitat to determine whether roost trees may be affected. Lafayette County falls within the known range of the I. bat. While there may be no records, how many surveys have been done in Lafayette County? Is the Corps determination based on survey data that failed to document the I. bat, or no survey data? In the absence of previous survey results, an evaluation of the presence of suitable roosting habitat and the potential effects to that habitat will allow us to determine if additional surveys for bats are necessary.

2.) Bald eagle - I assume the Corps will conduct a survey immediately prior to construction to ensure that no eagles have established a nesting territory in the project area. Such a survey would be needed to ensure we avoid adverse effects to the species.

3.) Pallid sturgeon - given that the work includes manipulation of the river, and there is potential for pallid sturgeon to occur there, it would appear that there is potential, hence a may affect, yet the effects would likely be insignificant and discountable. Thus one could conclude a may affect, not likely to adversely affect the pallid.

Please let us know if you need additional information.

Thanks- Jane

****
Jane Ledwin
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
101 Park DeVille Drive
Columbia, Missouri 65203
Phone 573/234-2132, extension 109
email jane_ledwin@fws.gov
****

"Vandenberg, Matthew D NWK" <Matthew.D.Vandenberg@nwk02.usace.army.mil>

09/12/2006 02:05 PM

To: <tom_bell@fws.gov>, <jane_ledwin@fws.gov>, <Barbara_Moran@fws.gov>, <Stuart.Miller@mdc.mo.gov>

cc:

Subject: Informal Endangered Species Consultation

Vandenberg, Matthew D NWK

From: Stuart Miller [Stuart.Miller@mdc.mo.gov]
Sent: Wednesday, September 13, 2006 3:29 PM
To: Vandenberg, Matthew D NWK
Cc: Barbara_Moran@fws.gov; jane_ledwin@fws.gov; tom_bell@fws.gov
Subject: Re: Informal Endangered Species Consultation

Hi Matt,

I looked at a natural heritage review for the Baltimore chute site and nothing came up except pallid sturgeon. There are several state listed endangered species that have been identified for the Missouri reach between the Grand and Kansas Rivers: American Bittern and Flathead Chub.
There are 8 fish species, 1 mussel and 1 arthropod of state-wide concern in that reach of river.

There are no known eagle nests in the proposed work area. Our staff recommends that the a survey for nests occurs well before work begins, which echos Jane's comments. Our biologists believe bald eagles are expanding quickly so that areas like the Big Muddy Refuge and other more isolated tracts will soon have eagle nests all along the big rivers.

I hope this helps. I'll send the hard copy of the natural heritage report for your files.

Stuart Miller
Policy Coordinator
Missouri Department of Conservation
PO Box 180
Jefferson City, MO 65102-0180
573-522-4115 x3378 (voice)
573-526-4495 (FAX)

>>> "Vandenberg, Matthew D NWK"
<Matthew.D.Vandenberg@nwk02.usace.army.mil> 09/12/06 2:05 PM >>> Team,

The proposed Baltimore Bottoms Chute Construction site is located in Lafayette County on the Big Muddy National Fish and Wildlife Refuge at River Miles 297.0 to 300.1. The site contains potential habitat for the bald eagle, pallid sturgeon, and Indiana bat. The Corps believes that the proposed project will have no affects on the Indiana bat as this species is not known to occur in Lafayette County. The proposed project may affect the bald eagle and pallid sturgeon during chute construction through the removal of some large (24" dbh or greater) riparian cottonwood trees and through dredging operations and notching of dikes and stone toe revetment in the Missouri River at the proposed chutes' inlets and outlets. The Corps believes that the overall project will enhance habitat for all three above listed species. Therefore, the Corps has determined that the proposed project is not likely to adversely affect the bald eagle and pallid sturgeon; thus no formal consultation under the ESA will be required. The Corps requests the Service's concurrence with this determination.
Additionally,
the Corps requests that no adverse impacts to state listed species will result. Thanks,

Matthew D. Vandenberg

Environmental Resources Specialist

US Army Corps of Engineers

601 East 12th Street

United States Department of Agriculture

USDA

NRCS Natural Resources Conservation Service

Area Office, 1911 Boggs Creek Road, Jefferson City, Missouri 65101 Phone: 573 761-3105 Ext. 5

September 22, 2006

Mr. Matthew Vandenberg
Environmental Resource Specialist
Department of the Army
Corps of Engineers
700 Federal Building
Kansas City, MO 64106-2896

Dear Mr. Vandenberg,

Attached is the completed AD-1006 form per your request for a Farmland Conversion Impact Rating for the Baltimore Bottom Chute Project being implemented on property owned by the Fish and Wildlife Service in Lafayette County. As per our telephone conversation, I conferred with the FPPA coordinator for Missouri, Mr. Clayton Lee, and we are in agreement that by the definitions contained in FPPA regulations, this project does not convert the fundamental use of the land. Therefore, FPPA does not apply to this project, and "no" was checked in part II of the form.

If you have any questions, please call me (573) 761-3105 ext.161.

Keith Davis

Keith Davis
Area Resource Soil Scientist

Cc: Clayton Lee, Assistant State Soil Scientist, Columbia, MO

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 9/12/06
Name Of Project Baltimore Bottoms Chute Construction Project	Federal Agency Involved US Corps of Engineers
Proposed Land Use Fish and Wildlife Habitat (Endangered Species)	County And State Lafayette County, Missouri
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 9/18/06 Keith Davis

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☐	No ☒	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %		Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System		Date Land Evaluation Returned By NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	585.4			
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	585.4	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
700 FEDERAL BUILDING
KANSAS CITY, MISSOURI 64106-2896

REPLY TO
ATTENTION OF:

Mr. Keith Davis
Area Resource Soil Scientist
US Department of Agriculture
Natural Resources Conservation Service
1911 Boggs Creek Road
Jefferson City, MO 65101

Subject: Farmland Conversion Impact Rating

Dear Mr. Davis:

The purpose of this letter is to transmit a copy of the Farmland Conversion Impact Rating form, with map, in order to comply with the Farmland Protection Policy Act (7 U.S.C. 4201, et. Seq).

The proposed project under consideration is the Baltimore Bottoms Chute and Wetland Construction Project as part of the US Fish and Wildlife Service's Big Muddy National Wildlife Refuge in Lafayette County Missouri. This preferred alternative for this project is to notch Missouri River stone toe revetments to create three side chutes of varying lengths and to breech an interior levee (Hodge Levee) to provide hydrology to approximately 1060 acres of agricultural and grassland area for wetland creation and enhancement. A total of approximately 585 acres will be permanently impacted in order to create and enhance area wetlands (see enclosed map).

Please review the enclosed form to determine if the site of the proposed project contains prime, unique, statewide or local important farmland. If you have any questions or concerns regarding the enclosed form, please do not hesitate to contact me in writing at the letterhead address, by phone (816/389-3146), fax (816/389-2025), or email at matthew.d.vandenberg@usace.army.mil. Thank you in advance for your cooperation.

Sincerely,

Matthew D. Vandenberg
Environmental Resource Specialist

Encls.

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 9/12/06
Name Of Project Baltimore Bottoms Chute Construction Project	Federal Agency Involved US Corps of Engineers
Proposed Land Use Fish and Wildlife Habitat (Endangered Species)	County And State Lafayette County, Missouri
PART II *(To be completed by NRCS)*	Date Request Received By NRCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☐	No ☐	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %		Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System		Date Land Evaluation Returned By NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
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B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	585.4	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
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12. Compatibility With Existing Agricultural Use					
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PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
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TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

GENERAL PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

MO-G699000

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

All Outfalls

Habitat Restoration Projects: return water and stormwater runoff from dredged material deposition sites, bank notching/chute excavation to allow the river to actively scour and widen and other disturbance along the Missouri and Mississippi Rivers for fish and wildlife mitigation projects and shallow water habitat development projects.

This permit authorizes only wastewater, including storm waters, discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

August 19, 2005
Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

August 18, 2010
Expiration Date

Edward Galbraith, Director of Staff, Clean Water Commission

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Discharges shall not violate Water Quality Standards 10 CSR 20-7.031.

2. There are no regular sampling requirements in this permit. However, the department may require sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or other such evidence of off-site contamination outside the scope of the proposed activities. If such an action is needed, the department will specify in writing any additional sampling requirements, including such information as location, extent, and parameters.

STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Part I standard conditions dated October 1, 1980, and hereby incorporated as though fully set forth herein.

APPLICABILITY

1. This permit authorizes the discharge of return water and stormwater from dredged material deposition sites, bank notching/chute excavation to allow the river to actively scour and widen and other disturbance resulting from habitat construction projects along the Missouri and Mississippi Rivers for fish and wildlife mitigation projects and shallow water habitat development projects owned or constructed by the U.S. Army Corps of Engineers to waters of the state of Missouri. A Missouri State Operating Permit that specifically identifies the project must be issued before any construction can occur.

2. This permit does not apply to discharges to streams or lakes other than the Missouri or Mississippi Rivers and adjacent wetlands.
3. This permit will not be issued for discharges within 1000 feet of drinking water supply intakes.

4. This permit will not be issued for discharges within two stream miles upstream of biocriteria reference locations identified or described in 10 CSR 20, Chapter 7. These regulations are available at many libraries or on the internet at http://www.sos.state.mo.us/adrules/csr/csr.asp. A site specific permit will be required if these conditions exist.

5. This general permit does not authorize directing storm waters across private property not owned or operated by the permittee.

6. This general permit does not authorize any discharge to waters of the state of sewage, process wastewaters, or pollutants such as:
   (a) Hazardous substances and oil and grease that may be contained in dredged sediment,
   (b) Wastewater generated from air pollution control equipment or the containment of scrubber water in lined ponds, or
   (c) Domestic wastewaters, including gray waters.

7. If at any time the Missouri Department of Natural Resources determines that the quality of waters of the state may be better protected by requiring the owner/operator of the permitted site to apply for a site specific permit, the department may require any person to obtain a site specific operating permit [10 CSR 20-6.010 (13) and 10 CSR 20-6.200(5)].

   The department may require the permittee to apply for and obtain a site specific or different general permit if:

   (a) The permittee is not in compliance with the conditions of this general permit;
   (b) The discharge no longer qualifies for this general permit due to changed site conditions and regulations; or
   (c) Information becomes available that indicates water quality standards have been or may be violated.

8. Any owner/operator authorized by a general permit may request to be excluded from the coverage of the general permit and apply for a site specific permit [10 CSR 20-6.010 (13) and 10 CSR 20-6.200(5)].

REQUIREMENTS AND POLLUTION PREVENTION PLAN GUIDELINES

Note: These requirements do not supersede nor remove liability for compliance with county and other local ordinances.

1. Water Quality Standards
   (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
   (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
      (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
      (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
      (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
      (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
      (5) There shall be no significant human health hazard from incidental contact with the water;
      (6) There shall be no acute toxicity to livestock or wildlife watering;
      (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
      (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

2. Good housekeeping practices shall be maintained on the site to keep solid waste from entry into waters of the state.

3. All fueling facilities present on the site shall adhere to applicable federal and state regulations concerning underground storage, aboveground storage, and dispensers, including spill prevention, control and counter measures.

4. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that are transported, stored, or used for maintenance, cleaning or repair shall be managed according to the provisions of RCRA and CERCLA.

5. An individual shall be designated by the permittee as responsible for environmental matters. Staff of the permitted facility shall ensure that Best Management Practices (BMPs) are continually implemented and effective.

6. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

7. In the event soil contamination or hazardous substances are discovered at the site during dredging activities, the permittee shall request guidance from the Department's Hazardous Waste Program in writing.

TRANSFER OF OWNERSHIP

This permit may be transferred to a new owner by submitting an "Application for Transfer of Operating Permit" signed by the seller and buyer of the facility, along with the appropriate modification fee.

TERMINATION

In order to terminate the permit, the permittee shall notify MDNR by submitting Form H, included with the State Operating Permit. The permittee shall complete Form H and mail it to MDNR at the address noted in the cover letter of this permit.

This general permit will expire five years from the effective date of the permit (see page 1). The issue date is the date the State Operating Permit is issued to the applicant. The expiration date may or may not coincide with the date the authorized project or development is scheduled for completion.

If the project completion date will be after the expiration date of this general permit, then the permittee must reapply to the department for the permit to be re-issued. In order for the permit to be re-issued, the permittee should submit the appropriate application form(s) at least 180 days before the expiration of the permit if dredging activity is expected to continue past the expiration date of this general permit.

If the permittee does not apply for the renewal of this permit, this permit will automatically terminate on the expiration date. Continued discharges from a dredging project that has not been fully stabilized are prohibited beyond the expiration date; unless the permit is reissued or the permittee has filed a timely application for the reissuance of this permit.

DUTY TO COMPLY

The permittee shall comply with all conditions of this general permit. Any noncompliance with this general permit constitutes a violation of Chapter 644, Missouri Clean Water Law, and 10 CSR 20-6.200. Noncompliance may result in enforcement action, termination of this authorization, or denial of the permittee's request for renewal.

Appendix B

Cultural Resources

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
700 FEDERAL BUILDING
KANSAS CITY, MISSOURI 64106-2896

August 8, 2006

REPLY TO
ATTENTION OF

Environmental Resources Section
Planning Branch

Mr. Mark Miles
Director and Deputy State Historic Preservation Officer
State Historic Preservation Office
Department of Natural Resources
P. O. Box 176
Jefferson City, Missouri 65102-0176

Dear Mr. Miles:

The U.S. Army Corps of Engineers, Kansas City District's Missouri River Fish and Wildlife Project is planning a wetland restoration project at Baltimore Bend in Lafayette County. This project is one component of the larger mitigation project that is being conducted at various locations on the Missouri River. The proposed Baltimore Bend project has not been previously coordinated with your office. The proposed project would include federal funding. This letter initiates Section 106 coordination for this project location.

The project will consist of at least two phases (Figures 1 and 2). In general, Phase I would construct of a two chutes riverward of an existing non-federal levee 4190 and 4850 feet in length which connect to an existing natural chute. Phase II is construction of a large chute, floodplain reconnection through strategic breeches of an existing non-federal levee, enhancement of wetland resources of the site, and vegetative plantings. The project is designed to create 66.2 acres of shallow water chute habitat immediately following construction, and approximately 113.7 acres of shallow water chute habitat after the three chutes erode to design width. Additionally, spoil material from the chutes will create up to approximately 85.5 acres of temporary sandbar habitat. An existing non-federal levee will be breeched, increasing the connectivity of 1060 acres of protected land from a 50-year frequency, to approximately a 1-yr frequency. An existing pump station will be removed and replaced with a stoplog structure to control water levels on the site, and thus enhance the wetland resources of the site. The project will create three new islands, for a total of 4 islands along the bend, and will restore over 8 miles of bank line along the chute channel borders greatly enhancing the existing aquatic habitat. A final phase to the project may include dike extensions and raises in the existing channel to create sandbar habitat and ensure navigation channel maintenance.

An accreted land study of the proposed project area was undertaken by the Corps to determine the likelihood of the presence of prehistoric archeological sites within the proposed project area. Five historic channels were used in the study including the 1804, 1879, 1892, 1926, and the present channel location maps (Figure 3). Based on the study, it is apparent that the former channel covered much of the northern and southern project area. Given the snap-shot locations of the channels it also seems likely that the river channel migrated over the entire project area, as well. In addition, the chutes, the major ground disturbing activity, will be excavated almost entirely on accreted land.

A review of the National Register of Historic Places (NRHP) found no NRHP listed sites within or near the project area. The Corps of Discovery camped within the present project area on September 16, 1806 (Figure 4). The camp site was along the south side of a large island on the north side of the old channel. It is unlikely that any trace of the camp site remains as both the 1879 and 1892 river channels crossed the recorded camp location. The Kansas City District has no information about previously recorded sites within the proposed project area. However, given that the project area largely or entirely consists of accreted land it is unlikely that any are present within the proposed project area. No ship wrecks are recorded within or near the proposed project area.

Given, that the project area likely consists entirely of recently accreted lands, it is unlikely that the proposed project will impact archeological sites or historic structures. Therefore, we request your concurrence that the proposed project will have no effect on historic properties and that the project may proceed with no further consultation from your office. If previously recorded archeological sites or historic structures are present within the proposed project area or your office deems that a survey is warranted, the Corps would conduct any necessary investigations.

In the unlikely event that archeological materials are discovered during construction, work in the area of discovery will cease and the discovery investigated by a qualified archeologist. The findings on the discovery would be coordinated with your office and appropriate federally recognized Native American tribes, if appropriate.

Thank you for your consideration in this matter. If you have any questions or have need of further information please contact me at (816) 389-3138 or at Timothy.M.Meade@usace.army.mil.

Sincerely,

Timothy M. Meade

Timothy Meade
Cultural Resource Manager

Enclosures

CULTURAL RESOURCE ASSESSMENT
Section 106 Review

CONTACT PERSON/ADDRESS

Timothy Meade
Kansas City District, Corps of Engineers
700 Federal Building
Kansas City, Missouri 64106-2896

C:

Joe Cothern, EPA

PROJECT:

Baltimore Bend Wetland Restoration Project

FEDERAL AGENCY

COE

COUNTY:

LAFAYETTE

The State Historic Preservation Office has reviewed the information submitted on the above referenced project. Based on this review, we have made the following determination:

☐ After review of initial submission, the project area has a low potential for the occurrence of cultural resources. A cultural resource survey, therefore, is not warranted.

☒ Adequate documentation has been provided (36 CFR Section 800.11). There will be "no historic properties affected" by the current project.

☐ An adequate cultural resource survey of the project area has been previously conducted. It has been determined that for the proposed undertaking there will be "no historic properties affected".

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK ARE CHANGED, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: Mark A. Miles — **August 14, 2006**

Mark A. Miles, Deputy State Historic Preservation Officer — **Date**

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102
For additional information, please contact Judith Deel, (573) 751-7862. Please be sure to refer to the project number: 009-LF-06

Appendix C

Environmental Permits and Clearances

NATIONWIDE PERMIT No. 27
STREAM AND WETLAND RESTORATION ACTIVITIES

Activities in waters of the US associated with the restoration of former waters, the enhancement of degraded tidal and non-tidal wetlands and riparian areas, the creation of tidal and non-tidal wetlands and riparian areas, and the restoration and enhancement of non-tidal streams and non-tidal open water areas as follows:

(a) The activity is conducted on:

(1) Non-Federal public lands and private lands, in accordance with the terms and conditions of a binding wetland enhancement, restoration, or creation agreement between the landowner and the U.S. Fish and Wildlife Service (FWS) or the Natural Resources Conservation Service (NRCS), the National Marine Fisheries Service, the National Ocean Service, or voluntary wetland restoration, enhancement, and creation actions documented by the NRCS pursuant to NRCS regulations; or

(2) Reclaimed surface coal mine lands, in accordance with a Surface Mining Control and Reclamation Act permit issued by the OSM or the applicable state agency (the future reversion does not apply to streams or wetlands created, restored, or enhanced as mitigation for the mining impacts, nor naturally due to hydrologic or topographic features, nor for a mitigation bank); or

(3) Any other public, private or tribal lands;

(b) *Notification:* For activities on any public or private land that are not described by paragraphs (a)(1) or (a)(2) above, the permittee must notify the District Engineer in accordance with General Condition 13; and

(c) Planting of only native species should occur on the site.

Activities authorized by this NWP include, to the extent that a Corps permit is required, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms; the installation of current deflectors; the enhancement, restoration, or creation of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or create stream meanders; the backfilling of artificial channels and drainage ditches; the removal of existing drainage structures; the construction of small nesting islands; the construction of open water areas; the construction of oyster habitat over unvegetated bottom in tidal waters; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; mechanized land clearing to remove non-native invasive, exotic or nuisance vegetation; and other related activities.

This NWP does not authorize the conversion of a stream to another aquatic use, such as the creation of an impoundment for waterfowl habitat. This NWP does not authorize stream channelization. This NWP does not authorize the conversion of natural wetlands to another

aquatic use, such as creation of waterfowl impoundments where a forested wetland previously existed. However, this NWP authorizes the relocation of non-tidal waters, including non-tidal wetlands, on the project site provided there are net gains in aquatic resource functions and values. For example, this NWP may authorize the creation of an open water impoundment in a non-tidal emergent wetland, provided the non-tidal emergent wetland is replaced by creating that wetland type on the project site. This NWP does not authorize the relocation of tidal waters or the conversion of tidal waters, including tidal wetlands, to other aquatic uses, such as the conversion of tidal wetlands into open water impoundments.

Reversion. For enhancement, restoration, and creation projects conducted under paragraphs (a)(3), this NWP does not authorize any future discharge of dredged or fill material associated with the reversion of the area to its prior condition. In such cases a separate permit would be required for any reversion. For restoration, enhancement, and creation projects conducted under paragraphs (a)(1) and (a)(2), this NWP also authorizes any future discharge of dredged or fill material associated with the reversion of the area to its documented prior condition and use (i.e., prior to the restoration, enhancement, or creation activities). The reversion must occur within five years after expiration of a limited term wetland restoration or creation agreement or permit, even if the discharge occurs after this NWP expires. This NWP also authorizes the reversion of wetlands that were restored, enhanced, or created on prior-converted cropland that has not been abandoned, in accordance with a binding agreement between the landowner and NRCS or FWS (even though the restoration, enhancement, or creation activity did not require a Section 404 permit). The five-year reversion limit does not apply to agreements without time limits reached under paragraph (a)(1). The prior condition will be documented in the original agreement or permit, and the determination of return to prior conditions will be made by the Federal agency or appropriate state agency executing the agreement or permit. Before any reversion activity the permittee or the appropriate Federal or state agency must notify the District Engineer and include the documentation of the prior condition. Once an area has reverted to its prior physical condition, it will be subject to whatever the Corps Regulatory requirements will be at that future date. (Sections 10 and 404)

Note: Compensatory mitigation is not required for activities authorized by this NWP, provided the authorized work results in a net increase in aquatic resource functions and values in the project area. This NWP can be used to authorize compensatory mitigation projects, including mitigation banks, provided the permittee notifies the District Engineer in accordance with General Condition 13, and the project includes compensatory mitigation for impacts to waters of the US caused by the authorized work. However, this NWP does not authorize the reversion of an area used for a compensatory mitigation project to its prior condition. NWP 27 can be used to authorize impacts at a mitigation bank, but only in circumstances where it has been approved under the Interagency Federal Mitigation Bank Guidelines.

EXCERPTS FROM JANUARY 15, 2002 FEDERAL REGISTER
(INCLUDING CORRECTIONS PUBLISHED 13 FEBRUARY 2002)

C. Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by an NWP to be valid:

1. Navigation. No activity may cause more than a minimal adverse effect on navigation.

2. Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

4. Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

5. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

6. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with the case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

7. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

8. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. Water Quality.

(a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

(b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the

establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs). This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

10. Coastal Zone Management. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

11. Endangered Species.

(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

(b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and ***http://www.nfms.gov/prot_res/esahome.html*** respectively.

12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

13. Notification.

(a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

(1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

(2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

(3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Notification: The notification must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided result in a quicker decision.);

(4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

(5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

(6) For NWP 14 (Linear Transportation Projects), the PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

(7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

(8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

(9) For NWP 29 (Single-Family Housing), the PCN must also include:

(i) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

(ii) A statement that the single-family housing activity is for a personal residence of the permittee;

(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring ¼-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than ¼-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(i) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site;

(11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

(12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

(13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

(15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

(c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)–(18) of General Condition 13. A letter containing the requisite information may also be used.

(d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary.

The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP. If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either:

(1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit;

(2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or

(3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan. (e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. For activities requiring notification to the District Engineer that result in the loss of greater than ½-acre of waters of the

US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

(f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than (¼-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

14. Compliance Certification. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

(a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the CWA).

19. Mitigation. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

(a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

(d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, ¼-acre of wetlands cannot be created to change a ¾-acre loss of wetlands to a ½-acre loss associated with NWP 39 verification. However, ½-acre of created wetlands can be used to reduce the impacts of a ½-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

(e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

(g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

(h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

20. Spawning Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of a important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the

fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow. This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

26. Fills Within 100-Year Floodplains. For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

(b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

(c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project). For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps. For projects that have been verified by the Corps, an extension of a Corps approved completion date maybe requested. This request must be submitted at least one month before the previously approved completion date.

D. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project.

E. Definitions

Best Management Practices (BMPs): BMPs are policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural. A BMP policy may affect the limits on a development.

Compensatory Mitigation: For purposes of Section 10/404, compensatory mitigation is the restoration, creation, enhancement, or in exceptional circumstances, preservation of wetlands and/or other aquatic resources for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Creation: The establishment of a wetland or other aquatic resource where one did not formerly exist.

Enhancement: Activities conducted in existing wetlands or other aquatic resources that increase one or more aquatic functions.

Ephemeral Stream: An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Farm Tract: A unit of contiguous land under one ownership that is operated as a farm or part of a farm.

Flood Fringe: That portion of the 100-year floodplain outside of the floodway (often referred to as "floodway fringe").

Floodway: The area regulated by Federal, state, or local requirements to provide for the discharge of the base flood so the cumulative increase in water surface elevation is no more than a designated amount (not to exceed one foot as set by the National Flood Insurance Program) within the 100-year floodplain.

Independent Utility: A test to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Intermittent Stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of Waters of the US: Waters of the US that include the filled area and other waters that are permanently adversely affected by flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent above-grade, at-grade, or below-grade fills that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the US is the threshold measurement of the impact to existing waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and values. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Impacts to ephemeral streams are not included in the linear foot measurement of loss of stream bed for the purpose of determining compliance with the linear foot limits of NWPs 39, 40, 42, and 43. Waters of the US temporarily filled, flooded, excavated, or drained, but restored to preconstruction contours and elevations after construction, are not included in the measurement of loss of waters of the US.

Non-tidal Wetland: A non-tidal wetland is a wetland (i.e., a water of the US) that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open Water: An area that, during a year with normal patterns of precipitation, has standing or flowing water for sufficient duration to establish an ordinary high water mark. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. The term "open water" includes rivers, streams, lakes, and ponds. For the purposes of the NWPs, this term does not include ephemeral waters.

Perennial Stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Permanent Above-grade Fill: A discharge of dredged or fill material into waters of the US, including wetlands, that results in a substantial increase in ground elevation and permanently converts part or all of the waterbody to dry land. Structural fills authorized by NWPs 3, 25, 36, etc. are not included.

Preservation: The protection of ecologically important wetlands or other aquatic resources in perpetuity through the implementation of appropriate legal and physical mechanisms. Preservation may include protection of upland areas adjacent to wetlands as necessary to ensure protection and/or enhancement of the overall aquatic ecosystem. Restoration: Re-establishment of wetland and/or other aquatic resource characteristics and function(s) at a site where they have ceased to exist, or exist in a substantially degraded state.

Riffle and Pool Complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Single and Complete Project: The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers (see definition of independent utility). For linear projects, the "single and complete project" (i.e., a single and complete crossing) will apply to each crossing of a separate water of the US (i.e., a single waterbody) at that location. An exception is for linear projects crossing a single waterbody several times at separate and distant locations: each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies.

Stormwater Management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater Management Facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and BMPs, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream Bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream Channelization: The manipulation of a stream channel to increase the rate of water flow through the stream channel. Manipulation may include deepening, widening, straightening, armoring, or other activities that change the stream cross-section or other aspects of stream channel geometry to increase the rate of water flow through the stream channel. A channelized stream remains a water of the US, despite the modifications to increase the rate of water flow.

Tidal Wetland: A tidal wetland is a wetland (i.e., water of the US) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line (i.e., spring high tide line) and are inundated by tidal waters two times per lunar month, during spring high tides.

Vegetated Buffer: A vegetated upland or wetland area next to rivers, streams, lakes, or other open waters which separates the open water from developed areas, including agricultural land. Vegetated buffers provide a variety of aquatic habitat functions and values (e.g., aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality. A vegetated buffer can be established by maintaining an existing vegetated area or planting native trees, shrubs, and herbaceous plants on land next to open-waters. Mowed lawns are not considered vegetated buffers because they provide little or no aquatic habitat functions and values. The establishment and maintenance of vegetated buffers is a method of compensatory mitigation that can be used in conjunction with the restoration, creation, enhancement, or preservation of aquatic habitats to ensure that activities authorized by NWPs result in minimal adverse effects to the aquatic environment. (See General Condition 19.)

Vegetated Shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: A waterbody is any area that in a normal year has water flowing or standing above ground to the extent that evidence of an ordinary high water mark is established. Wetlands contiguous to the waterbody are considered part of the waterbody.

PUBLIC NOTICE

US Army Corps
of Engineers
Kansas City District

Date: December 17, 2003

Special Public Notice
Section 401 Water Quality Certification (WQC) Accepted
for Select Nationwide Permits (NWPs) in Missouri

On November 14, 2003, the Northwestern Division Engineer accepted Missouri Department of Natural Resources (MDNR) conditional WQCs for the following NWPs: 3, 4, 5, 6, 7, 12, 13, 14, 18, 27, 33, 36, 40, 41, 42 and 43. The conditions of these WQCs apply to all activities authorized by these NWPs.

In accordance with NWP General Condition 9, individual WQC is required from MDNR for the following NWPS: 15, 16, 17, 19, 20, 21, 22, 23, 25, 29, 30, 31, 32, 34, 37, 38, 39 and 44.

NWPs 1, 2, 8, 9, 10, 11, 24, 28 and 35 are authorized under Section 10 of the Rivers and Harbors Act of 1899 only and do not require WQC.

The Kansas City District has posted the Federal Register text of the January 15, 2002 (67 FR 2020-2095) NWPs, and corrections to the Federal Register, on our Internet Regulatory Program page: http://www.nwk.usace.army.mil/regulatory/regulatory.htm.

We have also posted the May 2, 2002, Missouri Regional Conditions for the NWPs, and the approved MDNR WQCs for the select NWPs, on our Internet Regulatory Program page.

Please direct questions concerning the current NWPs, the NWP General and Regional Conditions, and the accepted MDNR WQCs to the Kansas City District, Corps of Engineers, ATTN: Mark D. Frazier, CENWK OD-R, 700 Federal Building, 601 East 12th Street, Kansas City, Missouri, 64106, or call 816-983-3664, or email mark.d.frazier@usace.army.mil.

You may contact MDNR with questions concerning the accepted WQCs, or to request an individual WQC, by writing to the Missouri Department of Natural Resources, Water Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, or by calling 573-751-1404 (FAX: 573-526-5797) or by email: wpcs401cert@dnr.mo.gov. Additional information is available at MDNR's Internet page: http://www.dnr.state.mo.us/wpscd/wpcp/homewpcp.htm.

WATER POLLUTION CONTROL PROGRAM
Missouri General Water Quality Certification Conditions for NWP 27
(Stream and Wetland Restoration Activities)

Pursuant to Section 401 of the Clean Water Act of 1972 the following best management practices are included as conditions in the Section 404 U.S. Army Corps of Engineers' Nationwide Permit (NWP). These conditions ensure that stream and wetland restoration activities do not violate the Water Quality Standards of the State of Missouri resulting in permanent damage to habitat, increased turbidity, reduced bank and channel stability, and impacts to the biological and chemical integrity of the waterbody. Jurisdictional definitions for this activity are explained in the NWP.

Any land disturbance activities disturbing one or more acres of total area for the entire project requires a storm water permit from the Water Pollution Control Program for land disturbance activities. Note that this is one acre of area disturbed for the total project, not one acre of waters of the United States. For questions, please contact the Water Pollution Control Program's Permit Section at (573) 751-6825.

Petroleum products spilled into any waterbody or on the banks where the material may enter waters of the state shall be immediately cleaned up and disposed of properly. Any such spills of petroleum shall be reported as soon as possible to the Missouri Department of Natural Resources' 24-hour Environmental Emergency Response number at (573) 634-2436.

Pursuant to Chapter 644.038, RSMo, the department certifies this nationwide permit without conditions for the construction of highways and bridges approved by the Missouri Highway and Transportation Commission, as it applies to impacts in all waters of the state.

1. This certification does not allow the filling of a jurisdictional spring or a spring with connectivity to a jurisdictional stream.

2. Care shall be taken to keep machinery out of the waterway as much as possible. Fuel, oil and other petroleum products, equipment and any solid waste shall not be stored below the ordinary high water mark at any time or in the adjacent floodway beyond normal working hours. All precautions shall be taken to avoid the release of wastes or fuel to streams and other adjacent waterbodies as a result of this operation.

3. Clearing of vegetation/trees shall be the minimum necessary to accomplish the activity.

4. The riparian area, banks, etc., shall be restored to a stable condition to protect water quality as soon as possible. Seeding/planting of native vegetation, mulching and needed fertilization shall be within three days of final contouring, or as soon as possible as seasonal timing permits. On-site inspections of these areas shall be conducted by the permittee as necessary to ensure successful revegetation and stabilization, and to ensure that erosion and deposition of soil in waters of the state is not occurring from this project.

5. Only clean, nonpolluting fill shall be used.

6. Work shall be conducted during low flow whenever possible.

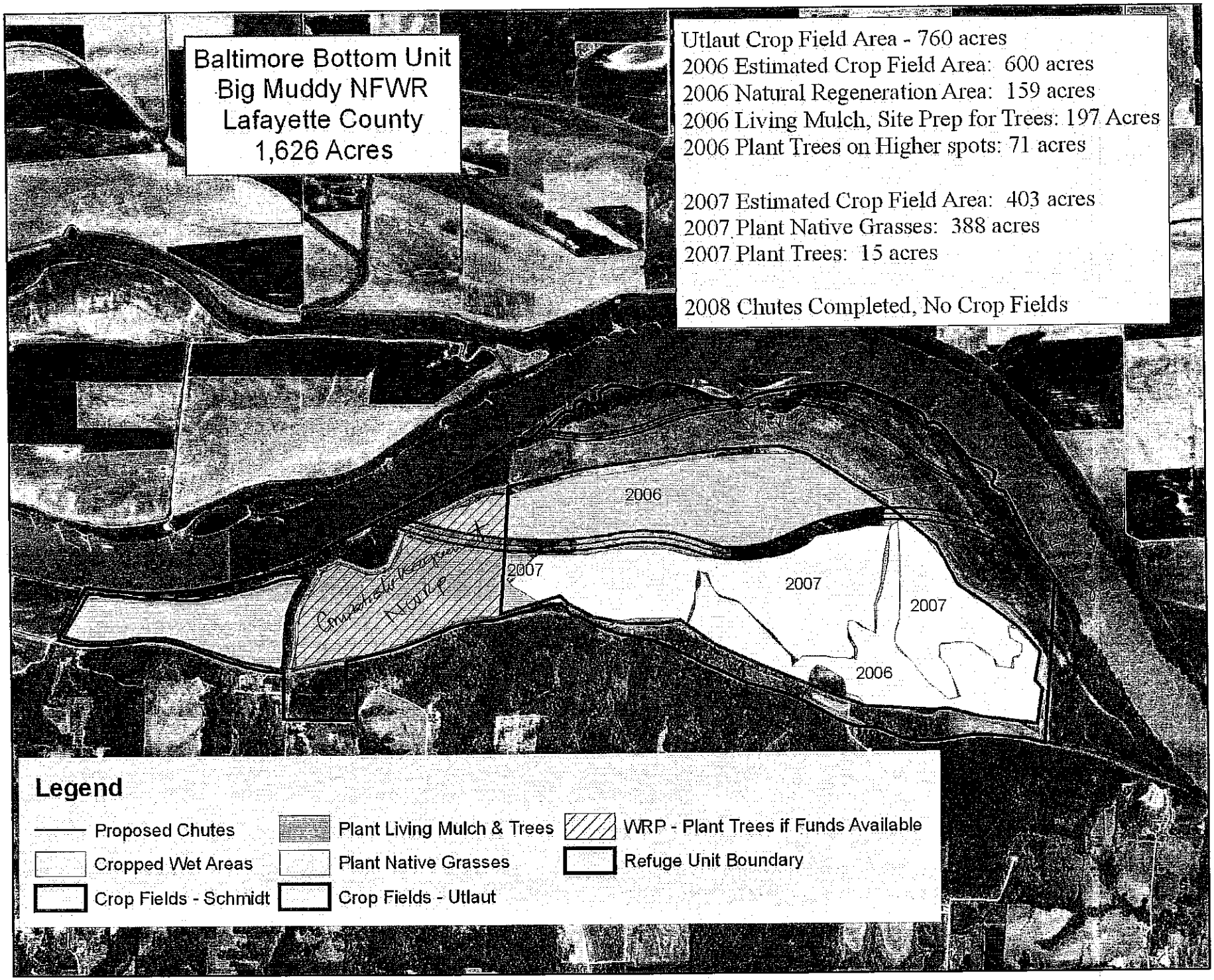
7. The following materials are not suitable for bank stabilization and should not be used due to their potential to cause violations of the general criteria of the Water Quality Standards, 10CSR 20-7.031 (3) (A) – (H):
   a. Earthen fill, gravel, broken concrete where the majority of material is less than 12 inches in diameter, and fragmented asphalt, since these materials are usually not substantial enough to withstand erosive flows;
   b. Concrete with exposed rebar;
   c. Tires, vehicles or vehicle bodies, construction or demolition debris are solid waste and are excluded from placement in the waters of the state; and
   d. Liquid concrete, including grouted riprap, if not placed as part of an engineered structure.

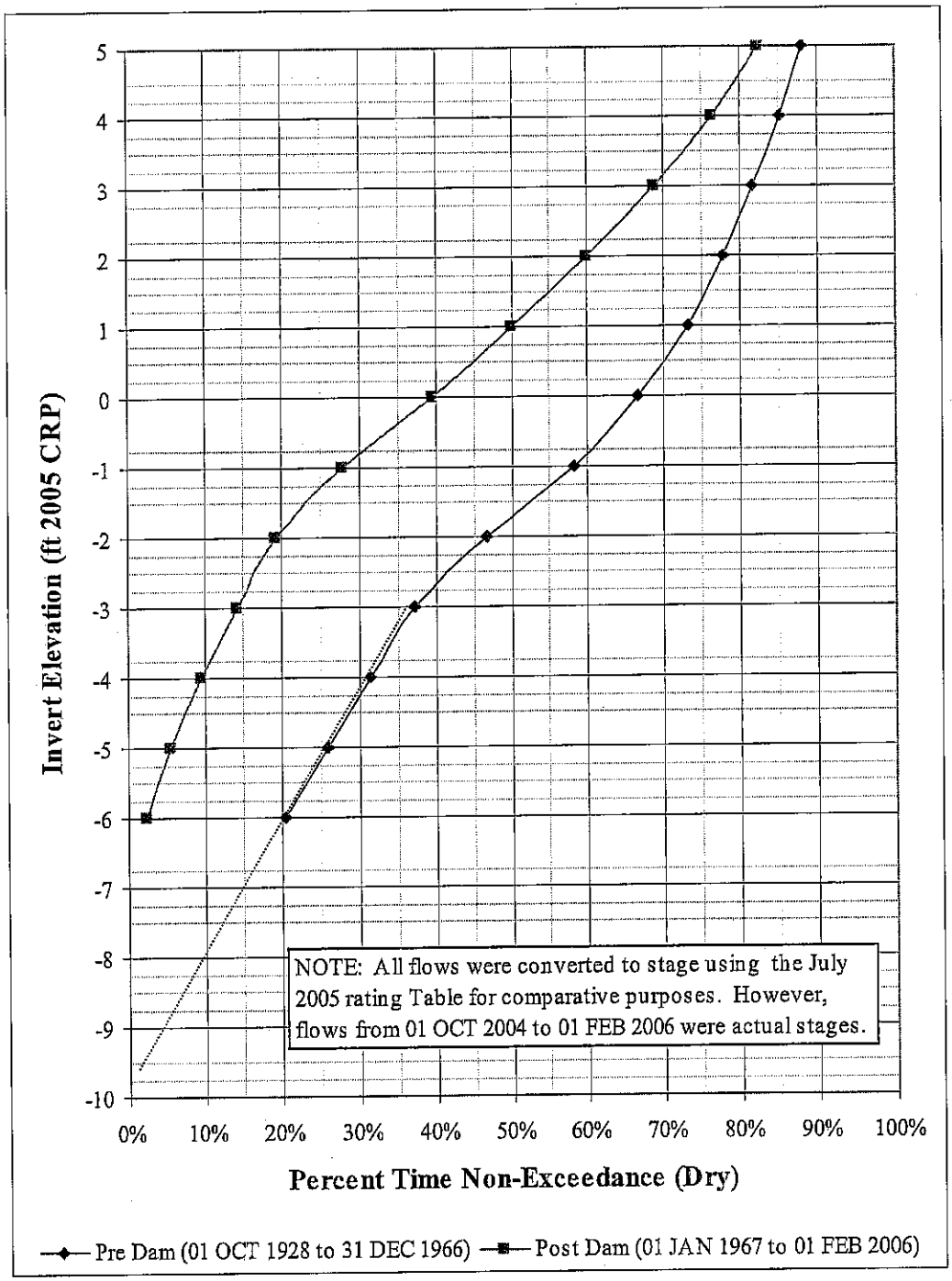
   Recycled concrete may be used provided that it is clean material broken into appropriately sized pieces (greater than 12 inches) of riprap with no protruding rebar.

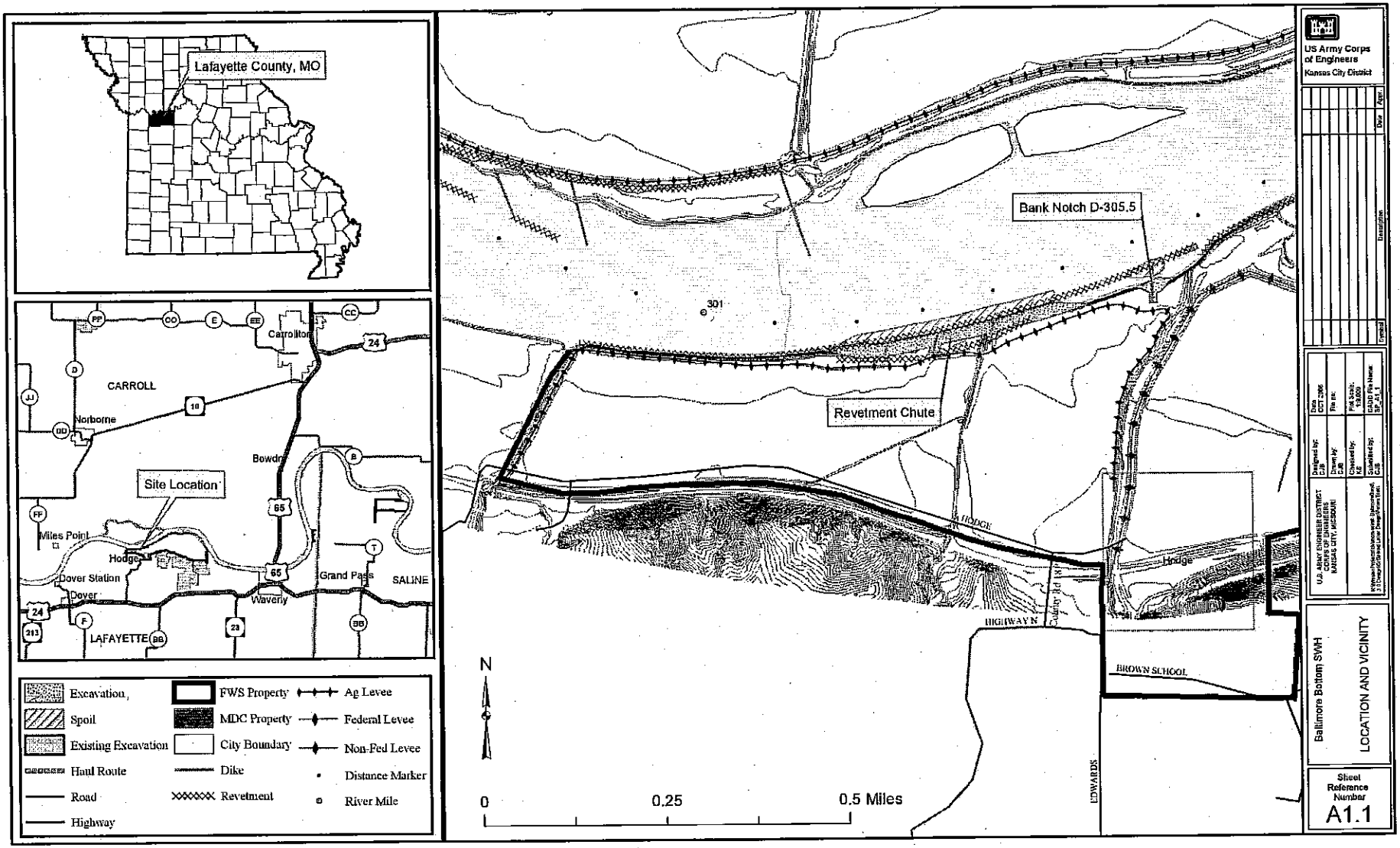
8. Instream culverts shall be sized and placed to maintain a depth of water at least as deep as the channel directly upstream of the crossing. Structures creating water velocities in excess two feet per second during average annual discharge shall be avoided. If preconstruction velocities exceed two feet per second, then structures shall not increase existing velocities. There shall be no drop between the downstream end of the culverts and the downstream water surface elevation.

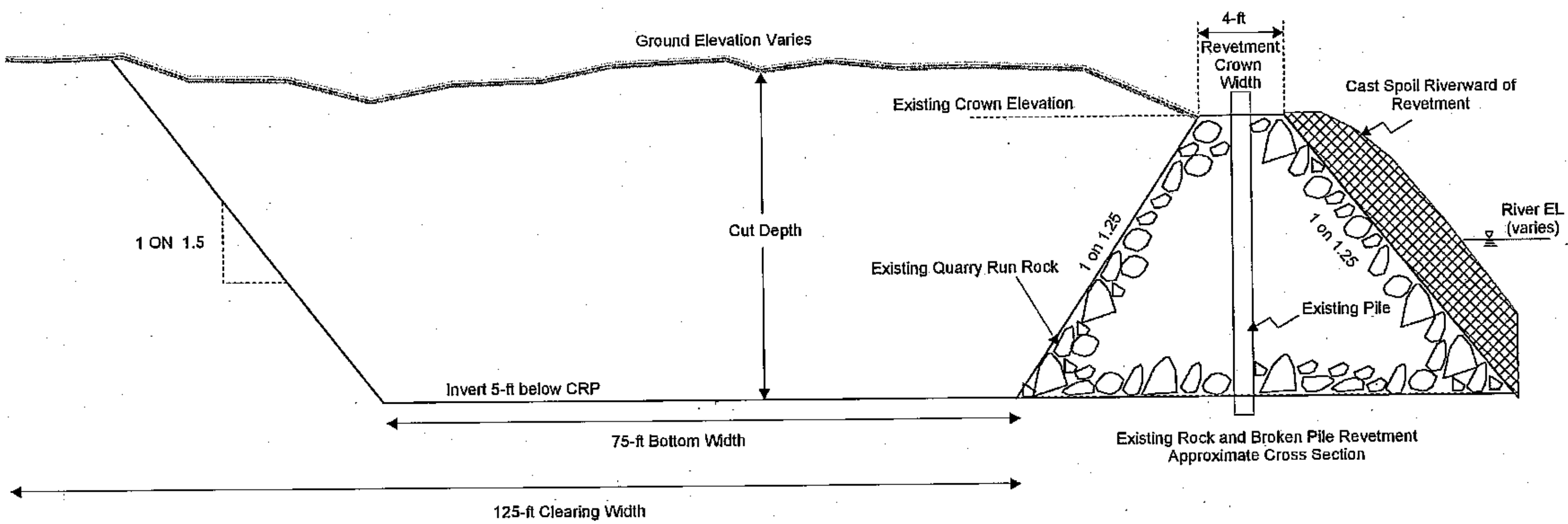
Appendix D

Technical Documents


Baltimore Bottom Unit
Big Muddy NFWR
Lafayette County
1,626 Acres
Utlaut Crop Field Area - 760 acres
2006 Estimated Crop Field Area: 600 acres
2006 Natural Regeneration Area: 159 acres
2006 Living Mulch, Site Prep for Trees: 197 Acres
2006 Plant Trees on Higher spots: 71 acres
2007 Estimated Crop Field Area: 403 acres
2007 Plant Native Grasses: 388 acres
2007 Plant Trees: 15 acres
2008 Chutes Completed, No Crop Fields
2006
2007
2007
2007
2006
Legend
Proposed Chutes
Cropped Wet Areas
Crop Fields - Schmidt
Plant Living Mulch & Trees
Plant Native Grasses
Crop Fields - Utlaut
WRP - Plant Trees if Funds Available
Refuge Unit Boundary


Invert Elevation (ft 2005 CRP)
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent Time Non-Exceedance (Dry)
NOTE: All flows were converted to stage using the July 2005 rating Table for comparative purposes. However, flows from 01 OCT 2004 to 01 FEB 2006 were actual stages.
Pre Dam (01 OCT 1928 to 31 DEC 1966)
Post Dam (01 JAN 1967 to 01 FEB 2006)


Lafayette County, MO
CARROLL
Norborne
Carrollton
Bowdrn
Site Location
Miles Point
Hodge
Dover Station
Dover
Waverly
Grand Pass
SALINE
LAFAYETTE
Excavation
Spoil
Existing Excavation
Haul Route
Road
Highway
FWS Property
MDC Property
City Boundary
Dike
Revetment
Ag Levee
Federal Levee
Non-Fed Levee
Distance Marker
River Mile
Bank Notch D-305.5
Revetment Chute
301
HIGHWAY N
BROWN SCHOOL
EDWARDS
N
0
0.25
0.5 Miles
US Army Corps of Engineers
Kansas City District
Baltimore Bottom SWH
LOCATION AND VICINITY
Sheet Reference Number
A1.1



US Army Corps of Engineers
Kansas City District

Symbol	Description	Date	Appr.

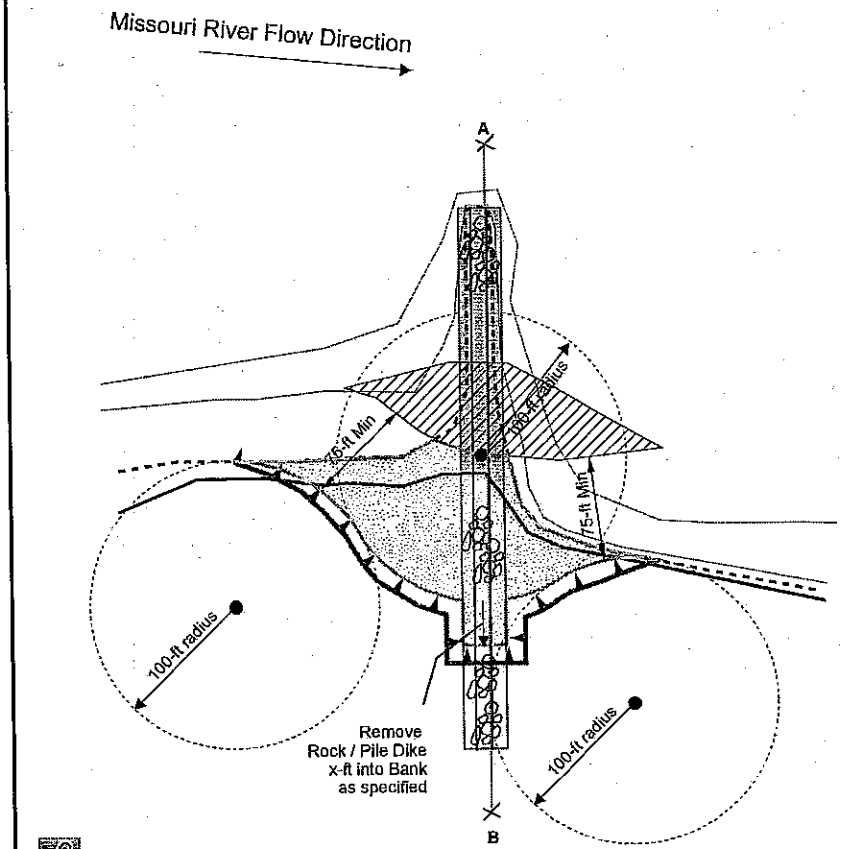
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
KANSAS CITY, MISSOURI

Designed by: AOJ	Date OCT 2006
Drawn by: AOJ	File no:
Checked by: CJB	Plot Scale: n/a
Submitted by: CJB	CADD File Name: BP_C1_1

Baltimore Bottom
Shallow Water Habitat

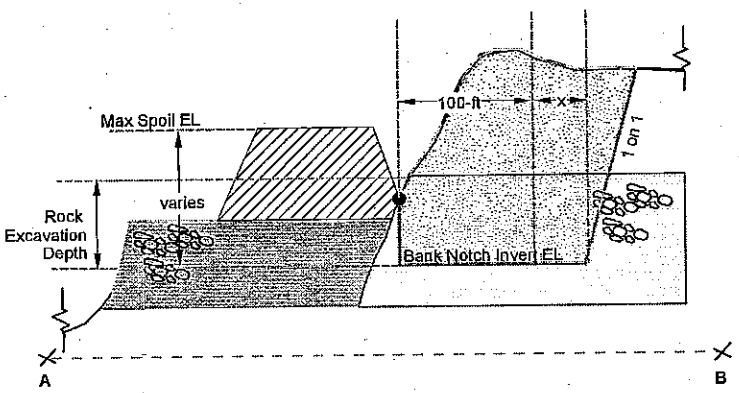
TYPICAL REVETMENT
CHUTE CROSS SECTION

Sheet Reference Number
C1.1



NOTE: All Excavated Rock to be stockpiled at a specified location

PLAN VIEW OF BANK NOTCH



PROFILE VIEW OF BANK NOTCH

Legend

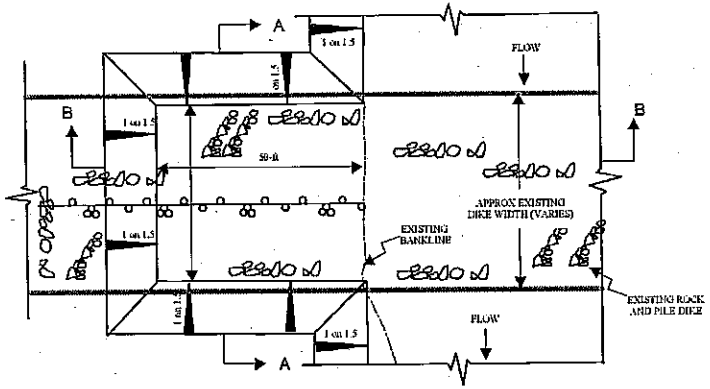
- Existing Ground: Bank Notch Invert Elevation Contour
- Stakeout Coordinate Point
- Existing Ground Contour Line, Lower in Elevation than Bank Notch Invert, (underwater in the Missouri River Channel)
- Existing Ground: High Bank Break Line
- Stakeout Circle
- Exposed Dike (either Rock fill, Rock and Wood Pile, or Wood Pile)
- Buried Dike (either Rock fill, Rock and Wood Pile, or Wood Pile)
- Excavation Polygon (at Bank Notch Invert EL)
- Spoil Location Polygon (Elevation up to 13-ft above Bank Notch Invert EL)
- Constructed Side Slope

US Army Corps of Engineers
Kansas City District

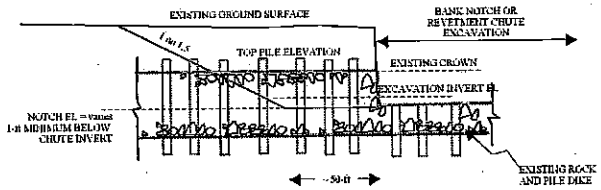
Baltimore Bottom
Shallow Water Habitat

TYPICAL BANK NOTCH LAYOUT DETAILS

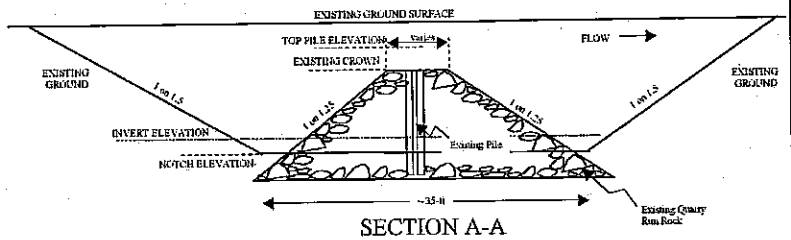
Sheet Reference Number
C1.2



PLAN VIEW



SECTION B-B



SECTION A-A

NOTCH ROCK AND PILE DIKE SECTION

NOT TO SCALE

US Army Corps of Engineers
Kansas City District

Ballimore Bottom
Shallow Water Habitat

NOTCH ROCK AND PILE
DIKE DETAILS

Sheet Reference Number
C1.3

SECTION 32 92 19

SEEDING AND PLANTING
04/06

PART 1 GENERAL

All seeding, tree, shrub and seedling planting shall commence only after the satisfactory completion of all other new work and after completing any site restoration necessary for preparation of the planting area.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z60.1	(1996) Nursery Stock

AGRICULTURAL MARKETING SERVICE (AMS)

AMS-01	(Aug 95) Federal Seed Act Regulations Part 201

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 602	(1995a) Agricultural Liming Materials
ASTM D 977	(1991) Emulsified Asphalt
ASTM D 2028	(1976; R 1992) Cutback Asphalt (Rapid-Curing Type)
ASTM D 4972	(1995a) pH of Soils
ASTM D 5268	(1992; R 1996) Topsoil Used for Landscaping Purposes
ASTM D 5883	(1996) Standard Guide for Use of Rotary Kiln Produced Expanded Shale, Clay or Slate (ESCS) as a Mineral Amendment in Topsoil Used for Landscaping and Related Purposes

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Equipment; G, RE

The contractor shall submit for approval the equipment to perform all operations relating to seeding and planting.

Delivery

The Contractor shall submit for approval prior to the delivery of materials to be used for seeding and planting

Material Sources

The Contractor shall submit material sources to be used for seeding and planting

SD-03 Product Data

Quantity Check; G, RE

Bag count or bulk weight measurements of material used compared with area covered to determine the application rate and quantity installed.

Seeding Periods; G, RE

Calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described.

Nursery Stock Planting Period; G, RE

Calendar time period for the nursery stock establishment period. When there is more than one establishment period, the boundaries of the planted area covered for each period shall be described.

SD-04 Samples

SD-07 Certificates

Seed; G, RE

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

a. Seed. Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.

Nursery Stock; G, RE

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements.

1.3 DELIVERY

1.3.1 Delivery

Submit a delivery schedule containing an itemized list and quantity of each species to be delivered to the Government at least 21 calendar days prior to the first day of delivery. Delivery schedule shall specify the means of climate control for transport and any temporary site storage. Schedule will be reviewed for any obvious non-compliance with requirements. Contractor will correct any such non-compliance prior to delivery.

1.4 SEEDING AND PLANTING AREAS

Seed disturbed areas including haul routes, levee breech excavations, and levee breech spoil areas. The interior slopes and bottom of the chute, and area between edge of excavation and edge of cleared debris from the clearing and grubbing operations will not be seeded. Disturbed areas other than required for construction shall be held to the minimum practicable. Where areas are disturbed solely for the convenience of the Contractor, as determined by the Contracting Officer, such areas shall be seeded and will be considered as protection of the environment. Plant trees and shrubs in area shown on the plans. For informational purposes, the tree planting area is approximately 207 acres.

PART 2 PRODUCTS

2.1 SEED MATERIALS

2.1.1 Deleterious Materials

Materials containing objectionable weed seeds or other species detrimental to the planting will not be acceptable.

2.1.2 Labels

Seed shall be labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act. Seed shall be furnished in sealed, standard containers unless approved by the Contracting Officer. Seed that is wet or moldy or that has been otherwise damaged in transit or storage will not be acceptable. All seed shall be blended by supplier prior to delivery.

2.1.3 Seed Mixtures

Seed shall be Missouri Ecotype. The seed mixture to be used shall be as follows:

Kinds of Seed	Pounds Pure Live Seed (PLS)/Acre
Virginia Wild Rye (Elymus virginicus)	6.0 lb.
Common alfalfa	2.0 lb.
Red top grass	0.5 lb.
Total Pounds Pure Live Seed/Acre	8.5 lb.

2.1.4 Bulk Seed

All grass seed will meet minimum of 98% purity and 85% germination, as indicated on the labels.

2.1.5 Soil for Repairs

Soil for repairs shall be of at least equal quality to that which exists in areas adjacent to the area to be repaired. Any soil used shall be free from roots, stones, and other materials that hinder grading, planting, and maintenance operations and that is free from objectionable weed seed and toxic substances.

2.1.6 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Unacceptable materials shall be removed from the job site. The Contractor shall furnish signed copies of statement from the suppliers, certifying that each container of seed delivered complies with specified requirements and is labeled in accordance with the Federal Seed Act and is at least equal to the requirements previously specified. This certification shall be furnished on or with all copies of seed invoices.

2.1.7 Storage

Materials shall be stored in designated areas. Seed shall be stored in cool, dry locations away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with seeding operation materials.

2.1.8 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

2.2 NURSERY STOCK MATERIALS

2.2.1 General

All tree and shrub plant materials must comply with ANSI Z60.1-1973 American Standard for Nursery Stock. Contractor shall submit certification from nursery stating compliance for this project order. Species shall conform to State and Federal laws related to inspection for disease and insect infestation. Inspection certificates required by law must accompany the invoice or stock order documents and be presented to Government representative at time of delivery.

2.2.2 Tree and Shrub Materials

Provide bare root nursery stock of quantity sufficient to create 12' by 12' spacing, or 302 seedlings/acre, over the required planting areas with random distribution by species distributed as follows:

Species Name	Percent of total
TREES	
swamp oak (Quercus bicolor)	30%
bur oak (Quercus macrocarpa)	20%
pin oak (Quercus palustris)	10%
black walnut (Juglans nigra)	5%
pecan (Carya illinoensis)	5%
shellbark hickory (Carya laciniosa)	5%
Kentucky coffeetree (Gymnocladus dioicus)	5%
shumard oak (Quercus shumardii)	5%
river birch (Betula nigra)	2%
SHRUBS	
gray dogwood (Cornus racemosa)	3%
buttonbush (Cephalanthus occidentalis)	2%
deciduous holly (Ilex decidua)	2%
choke cherry (Prunus virginiana)	2%
false indigo (Amorpha fruticosa)	2%
elderberry (Sambucus canadensis)	2%

2.2.3 Labels

Nursery stock plant material shall be delivered with legible identification labels attached. Labels shall be durable, waterproof and weatherproof. Labels shall state the correct botanical plant name and size.

2.2.4 Delivery and Storage

Plant material shall be protected during delivery to prevent desiccation and damage to branches, trunk, root system, or earth ball. Branches shall be protected by tying-in. Exposed branches shall be covered during transport. If the combined time of transport and site storage of plants will exceed 48-hours (total) prior to actual planting, then climate-controlled delivery transport and climate-controlled temporary site storage shall be provided by the contractor.

2.2.4 Inspection

Contractor shall perform a thorough inspection of plant stock at the time of delivery. Plant material shall be well shaped, vigorous and healthy with a healthy, well-branched root system, free from disease, harmful insects and insect eggs, sun-scald injury, disfigurement or abrasion. Plant material shall be checked for unauthorized substitution and to establish nursery grown status. Plant material showing desiccation, abrasion, sun-scald injury, disfigurement, or unauthorized substitution shall be rejected. The plant material shall exhibit typical form of branch to height ratio; and meet the caliper and height measurements specified. Plant material that measures less than specified, or has been poled, topped off or headed back, shall be rejected. Container-grown plant material shall show new fibrous roots and the root mass shall contain its shape when removed from the container. Plant material with broken or cracked balls; or broken containers shall be rejected. Bare-root plant material that is not dormant or is showing roots were pulled from the ground shall be rejected. Open soil amendment containers or wet soil amendments shall be rejected. Rejected material shall not be accepted for delivery and shall be immediately removed from the job site. The Contractor shall, at no

additional cost to the Government, provide acceptable replacement plant stock for any rejected materials.

2.2.6 Material Sources

Submit material sources for seeding and nursery stock operations. Nursery stock materials are available from George White State Forest Nursery at Licking, MO. Other potential sources include Forrest Keeling Nursery, 88 Keeling Lane, P.O. Box 135, Elsberry, MO 63343, phone 1-800-FKN-2401. Berg Warner Nursery, P.O. Box 259, Lizton, IN 46149-0259, phone 317-994-5487. Green Leaf Nursery Co. Inc., HC 72, Box 163, Park Hill, OK 74451, phone 918-457-5172. Source(s) shall be approved in advance by Government.

2.3 Fertilizer

Fertilizer shall be a time-release pellet suitable to supply the plants for 5 years (Nutri Pro® 16-8-8 or approved equivalent).

PART 3 EXECUTION

3.1 PREPARATION OF GROUND SURFACE

3.1.1 General

Equipment, in good condition, shall be provided for the proper preparation of the ground and for handling and placing all materials. Equipment shall be approved before work is started.

3.1.2 Clearing

Remove and dispose of debris and mow or bushog existing vegetation over 12 inches high. Massive clearing, grading or stripping is NOT required nor allowed due to the potential for increasing erosion around the area. Some grubbing may be required to remove underground roots that interfere with plant pits.

The prepared area should allow for reasonable access during seeding and planting operations and allow for easy identification of the newly planted materials when site is vacated.

3.1.3 Grading

Previously established grades shall be maintained on the areas to be seeded in a true and even condition; necessary repairs shall be made by adding soil as necessary to previously graded areas. All surfaces shall be left in an even and properly compacted condition to prevent formation of depressions.

3.1.5 Leveling

Surface irregularities, resulting from contractor operations before seeding, shall be leveled prior to seeding.

3.2 TIME AND CONDITIONS

3.2.1 Seeding

3.2.1.1 Seeding Periods

Seeding shall be performed only between dates of March 15 to May 15, August 20 to September 30, or December 1 to January 31, unless otherwise approved by the Contracting Officer. When delays in operations extend the work beyond the most favorable planting season for species designated or when conditions are such by reason of drought, high winds, excessive moisture, or other factors that satisfactory results are not likely to be obtained, work shall be halted as directed and resumed only when conditions are favorable or when approved alternate or corrective measures and procedures have been effected. If inspection during seeding operations, or after there is show of green, indicates that areas have been left unplanted, additional seed shall be sown as directed.

3.2.1.2 Seeding Method

Seeding method shall be drill seeding. The use of a standard grain drill is allowed provided that a standard legume box is provided for the seed, otherwise a native grass drill or rangeland grass drill of the "TruaxTM-type/like" shall be used. The drill shall be equipped with double coulter furrow openers, depth bands, press wheels and agitators in the seed box. The seed shall be uniformly spread in two directions at right angles to each other, using one half of the total seed to be distributed in each direction, unless extreme slopes interfere with the safe or practical use of the seeding equipment, in which case one or more passes in the same direction shall be an acceptable substitute. The seed shall be incorporated into the soil to an average depth of 1/8 to 1/4 inch below the soil surface. The grass seed mixture shall be drilled at the rate specified.

3.2.2 Tree and Shrub Planting

3.2.2.1 Planting Periods

Planting operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, frozen ground, or other unsatisfactory conditions prevail, the work shall be rescheduled in coordination with the Government. When special conditions warrant a variance to planting operations, proposed planting times shall be submitted for approval. Plant as early in spring as site conditions allow, but no later than May 15.

3.2.2.2 Planting Methods

Planting may be performed by hand or by machine.

3.2.2.3 Water and Fertilization

Apply fertilizer pellet to each planting. Apply in accordance with manufacturer instructions. Following fertilization, the ground around planting shall be watered until saturated unless instructed otherwise by the Government at time of plantings.

3.3 PROTECTION

Protection shall be provided against traffic or other use by erecting barricades immediately after treatment is completed, and by placing warning

signs as directed, on various areas.

3.4 REPAIRING AND RESEEDING

The Contractor shall be fully responsible for any damage caused by elements under his control. The Contracting Officer may direct areas that become damaged be repaired and reseeded or replanted to specification requirements.

-- End of Section --